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VOLUME NO. 1

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EXPLANATORY NOTES

OF

INCREASES, DECREASES, AND CHANGES IN LANGUAGES

IN THE BUDGET FOR THE

DEPARTMENT OF AGRICULTURE

FOR THE

FISCAL YEAR ENDING JUNE 30, 1936

AND OF

WORK DONE UNDER EACH OF THE APPROPRIATION ITEMS

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I N D E X

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Project Statements

Following the custom of previous years, for the sake of simplicity and avoidance of confusion, "Project Statements" as shown in this book in general are limited to a breakdown of funds appropriated or allotted directly to the Department of Agriculture and do not include funds transferred from other Departments or establishments, although the latter are included in the Budget expenditure schedules under the items involved. The Project Statements printed in the formal Budget and reprinted in the Subcommittee Print include, in addition to the direct funds, projects dealing with funds transferred from other Departments -- for example, funds received from such agencies as the Navy Department or the Veterans' Administration, for the inspection of meats by the Bureau of Animal Industry, or the inspection of food and drug samples by the Food and Drug Administration. Where it is desired to examine a project statement which includes such transferred funds, therefore, reference should be made to the Project Statements in the Budget or to the Subcommittee Print.

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Appropriation, 1932	\$ 778,815	
Appropriation, 1933	821,547	
Appropriation, 1934	731,347	

Appropriation, 1935	577,145	(a)
Budget Estimate, 1936	<u>584,712</u>	
Increase, Budget 1936, compared with		
Appropriation, 1935	<u>7,567</u>	(b)

(b) Increase of \$7,567 compared with 1935 appropriation consists of -

5% salary restoration, 1936 (to 100%)	+\$28,585
Increase in working funds for 1936	+ 13,020
Reduction: Funds transferred to Treasury Dept	- 34,038
	<u>+ 7,567</u>

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Secretary's Office..	\$33,974	\$36,872	\$38,813	\$1,941	-----
Under Secy's Office.	300	14,364	15,120	756	-----
Asst. Secy's Office.	10,830	9,500	10,000	500	-----
Office of Director of Scientific Work.	9,436	-----	-----	-----	-----
Office of Director of Extension Work .	7,838	8,550	9,000	450	-----
Office of Director of Personnel	51,417	62,383	78,686	3,233	+\$13,020(2)
Office of Budget and Finance	144,600	134,330	141,398	7,068	-----
Division of Operation	108,745	107,110	112,746	5,636	-----
Office of Solicitor .	146,082	169,998	178,949	8,951	-----
Transferred to:					
Dept. of the Interior	86,980	-----	-----	-----	-----
Treasury Department.	6,189	34,038	-----	-----	-34,038(3)
Total obligations ...	606,391	577,145	584,712	(1)28,585	-21,018
<u>Unobligated:</u>					
Salary reduction impoundments	(c)30,293	-----	-----	-----	-----
Other legislative impoundments	54,620	-----	-----	-----	-----
Other amounts unobligated	40,043	-----	-----	-----	-----
Total appropriation..	731,347	577,145	584,712	+ 7,567	

(c) Exclusive of \$1,114 salary reduction impoundments in connection with reimbursements from other bureaus.

The increase of \$7,567 for 1936 includes:

(1) An increase of \$28,585 for 5% salary restoration, 1936 (to 100%).

(2) An increase of \$13,020 to provide for employment of 3 investigators at \$3,800 each and 1 stenographer for same at \$1,620. These employees are urgently needed to make systematic inspections of all phases of operation of Department of Agriculture work in the field; to investigate special personnel cases and other difficulties and irregularities that arise in Washington and in the field; and to conduct special investigations, as directed by the Secretary of Agriculture, of matters arising in the conduct of the numerous and widespread activities of the Department, and to report, factually, impartially, independently, and directly to the Secretary upon such matters. The effective administration of the Department makes it imperative that more nearly adequate means be provided for obtaining direct information upon which the final settlement of matters of the type referred to will be based. It is believed also that more systematic inspection of field activities will be of assistance to the administrative officers of the various bureaus in Washington and to the members of the Department stationed in the field, often at isolated points, and that such inspections will tend to discourage and in some instances prevent the development and occurrence of undesirable situations which arise from time to time in connection with the work of the Department. This increase will give the Department of Agriculture a total of 5 investigators and will make it possible to conduct inquiries and investigations more promptly and thoroughly than in the past. The Department has approximately 1,750 field stations scattered throughout the country and engaged in widely varying lines of work. Necessary investigations can not be efficiently conducted with a smaller force.

In order to be of the maximum use the investigators requested will be in travel status a great part of the time. To provide for such expenses an increase of \$4,000 is included in the Budget, under the appropriation for "Miscellaneous Expenses, Department of Agriculture."

(3) A decrease of \$34,038 due to the transfer of the Washington disbursing work to the Treasury Department, in accordance with the provisions of Executive Order No. 6166, of June 10, 1933.

CHANGE IN LANGUAGE

The language relating to the establishment in the Department of Agriculture of the position of Under Secretary of Agriculture is omitted since this is permanent legislation.

WORK DONE UNDER THIS APPROPRIATION

This appropriation provides salaries for employees of the offices of the Secretary of Agriculture, the Under Secretary, the Assistant Secretary, the Director of Extension Work (office force paid by Extension Service); the Director of Personnel (including the office of the director, the division of appointments, and the investigations and classification sections); the Director of Budget and Finance (including the office of the director and budget officer; the division of estimates and reports; the division of accounts, comprising the bookkeeping and examining sections; the bureau

accounting service; and the division of purchase, sales and traffic, comprising the bid, traffic, and central supply sections); the Division of Operation (including the office of chief of division and department real estate officer; the personnel and estimates units; the mail and files, telegraph and telephone, buildings, housing, property, and motor-transport sections; the department post office, labor force, information service, and emergency-room service), and the Office of the Solicitor (including the Solicitor's office; the division of national forests, grain futures, cotton futures, grain standards, cotton standards, Federal warehouse, excess wool profits, farm products inspection, produce agency, standard container, packers and stockyards, and perishable agricultural commodities; the division of food and drugs, insecticides and fungicides, Federal seed, tea inspection, naval stores, virus-serum control, meat inspection, Federal import milk, Federal caustic poison, and compilation of laws; the division of animal and plant quarantine, Federal-aid roads, 28-hour law, bee imports, and agricultural colleges and experiment stations; the division of wild-life conservation, claims, fiscal, personnel, leases, contracts, patents, and acquisition of lands other than national forests; the stenographic, and mail and files sections, and district law officers in the field).

This organization comprises the general administration and supervision of the work of the department.

QUARTERS, HEAT, AND LIGHT ALLOWANCE AUTHORIZATIONS FOR 1936

Under "Salaries, Office of the Secretary," authorization of \$30,000 is requested for payment during 1936, from the several bureau appropriations applicable, of allowances to officers and employees of the Department of Agriculture permanently stationed in foreign countries for living quarters, including heat, fuel, and light, as authorized by the Act approved June 26, 1930 (U.S.C., Supp. VII, title 5, section 118a).

The estimates of the three bureaus involved, on a per annum basis, with comparative figures for 1935, are:

	<u>1936</u>	<u>1935</u>
Agricultural Economics	\$18,700	\$17,800
Entomology and Plant Quarantine	6,230	5,385
Animal Industry	<u>1,400</u>	<u>1,400</u>
	26,330	24,585
Loss, lapse where only part of year involved	-----	1,595
Plus, Departmental reserve authority for contingencies	<u>3,670</u>	-----
Total	<u>30,000</u>	<u>22,990</u>

A detailed schedule of the allowance rates for 1934 and 1935 and estimated for 1936 follows.

Schedule of Allowances for
Quarters, Heat, and Light of Employees
Permanently Stationed Abroad Under Act of
June 26, 1930

Appropriation and subappropriation	Title of position	Post of duty	Classification of posts	Domestic Group	Salary	Allowances		
						1936	Estimated 1935	Actual 1934
Bureau of Agricultural Economics Salaries and Expenses: Foreign Competition and Demand	Agri. Attache	Pelgrade, Yugo.	II	M	\$6,000	\$1,300	\$1,300	\$ 650
	Agri. Attache	Berlin, Germany	V	M	6,000	1,700	1,500	720
	Asst. Agri. Comm.	"	V	S	3,800	1,000	750	-
	Asst. Agri. Comm.	"	V	M	4,400	-	1,200	720
	Agri. Commissioner	Buenos Aires, Arg.	V	M	6,000	1,700	1,500	-
	Asst. Agri. Comm.	"	V	S	4,600	-	750	450
	Agri. Attache	London, England	V	S	6,400	1,500	1,200	650
	Prin. Mktg. Spec.	"	V	M	5,800	1,700	1,400	720
	Sr. Mktg. Spec.	"	V	M	5,600	1,700	1,400	720
	Agri. Attache	Paris, France	V	M	5,600	1,700	1,500	720
	Asst. Agri. Attache	"	V	M	4,600	1,500	1,200	-
	Agri. Commissioner	Shanghai, China	V	M	5,600	1,700	1,500	720
	Prin. Mktg. Spec.	"	V	M	6,000	1,700	1,400	720
	Asst. Agri. Comm.	"	V	M	3,800	1,500	1,200	600
	Commodity Spec.	Berlin, Germany	V	M	-	-	-	720
Total, Bureau of Agricultural Economics ..	- - - - -	- - - - -	-	-	74,200	18,700	17,800	8,110

Appropriation and subappropriation	Title of position	Post of duty	Classification of post	Domestic status	Group	Salary	Allowances		
							Estimated 1936	Estimated 1935	Actual 1934
Bureau of Entomology and Plant Quarantine									
Salaries and Expenses:									
Fruit Insects	Prin. Entomologist	Mexico City, Mex	V	M	2	\$5,500	\$720	\$720	\$720
"	Asst. Entomologist	Yokohama, Japan	IV	S	2	2,600	1,020	675	-
"	Asst. Entomologist	Yokohama, Japan	IV	M	2	3,200	-	-	720
"	Asst. Entomologist	Mexico City, Mex	V	S	3	2,900	500	500	500
Cereal and Forage Insects	Entomologist	Hyeres, France	I	M	2	4,200	780	550	550
Fruit Insects	Asst. Entomologist	Mexico City, Mex.	V	M	3	2,600	720	720	720
Cotton Insects	Asst. Entomologist	Tiahualilo, Mex.	I	M	3	2,800	450	450	450
Forest Insects	Asst. Entomologist	Budapest, Hungary	III	M	3	3,000	720	600	600
Cereal and Forage Insects	Asst. Entomologist	Hyeres, France	I	S	3	3,100	600	450	450
Fruit Insects	Asso. Entomologist	Mexico City, Mex	V	M	3	3,600	720	720	720
Total, Bureau of Entomology and Plant Quarantine						33,800	6,230	5,385	5,430
Bureau of Animal Industry:									
Salaries and Expenses:									
Inspection and Quarantine	Sr. Veterinarian	London, England	V	M	2	4,600	1,400	(al, 400	- - -
Grand Total						112,600	26,330	24,585	13,540

(a) From September 1, 1934, to June 30, 1935, only.

The figures for the fiscal years 1936 and 1935 differ in the case of two of the three bureaus involved, those for the Bureau of Agricultural Economics showing a net increase of \$900 and the Bureau of Entomology and Plant Quarantine showing an increase of \$845. In no single case does the increase exceed \$300.

These increases are proposed pursuant to authority contained in the Appropriation Act for the Department of Commerce, fiscal year 1935 (U. S. Stat. 73 Cong., Sess. II, Ch. 104, page 550), which raised the maximum limit for quarters allowances from \$720 (as provided in the Agricultural Appropriation Act for 1934) to \$1,700.

Only partial advantage was taken in 1935 of the increase permissible under the law, since the allotment to the Bureau of Agricultural Economics from the Department's total authorization did not permit of the full increase; and in the case of the Bureau of Entomology and Plant Quarantine it was impractical under the restricted allotment to make any increases at all.

The increases in the rates proposed for 1936 will put the Department's representatives abroad more on a par with those of the Departments of State and Commerce. The cost of living for Americans living abroad has greatly increased because of various trade restrictions; and, while the Act to adjust losses sustained by United States officers and employees in foreign countries due to the appreciation of foreign currencies as measured by the American dollar has helped the situation, it does not meet the problem of enhanced prices, especially for American goods bought by our representatives abroad.

(b) COMPENSATION, MECHANICAL SHOPS AND POWER PLANT.

Appropriation, 1932	\$ 125,000
Appropriation, 1933	125,000
Appropriation, 1934	120,960

Appropriation, 1935	-----
Budget Estimate, 1936	-----
Increase, Budget 1936, compared with	
Appropriation, 1935	=====

(Note: The complete abandonment of this appropriation, which provided for the compensation of the personnel of the mechanical shops and power plant, was effected in the Appropriation Act for the fiscal year 1935. The amounts necessary for regular building maintenance, power-plant operation, and elevator service were transferred to the Department of the Interior, and the funds required for operation of the motor-transport service and for necessary job work in the Office of the Secretary were transferred to the appropriations "Salaries, Office of the Secretary" and "Miscellaneous Expenses, Department of Agriculture," respectively.)

PROJECT STATEMENT

Projects	1934	1935	1936	Increase or decrease	
		(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Mechanical shops and power plant	\$24,066	-----	-----	-----	-----
Motor transport service	12,363	-----	-----	-----	-----
Transferred to Dept. of the Interior	73,238	-----	-----	-----	-----
Total obligations . . .	109,657	-----	-----	-----	-----
<u>Unobligated:</u>					
Salary reduction impoundments	(a) 2,481	-----	-----	-----	-----
Other legislative impoundments	4,278	-----	-----	-----	-----
Other amounts unobligated	4,544	-----	-----	-----	-----
Total appropriation . .	120,960	-----	-----	-----	-----

(a) Exclusive of \$2,720 salary reduction impoundments in connection with reimbursements from other bureaus.

(c) MISCELLANEOUS EXPENSES, DEPARTMENT OF AGRICULTURE

Appropriation, 1932	\$ 289,200
Appropriation, 1933	190,000
Appropriation, 1934	267,254

Appropriation, 1935	115,048
Budget Estimate, 1936	116,448
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>1,400 (a)</u>

(a) Increase of \$1,400 compared with 1935 appropriation represents an increase in working funds for 1936.

PROJECT STATEMENT

Projects	1934	1935	1936	Increase or decrease	
		(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Miscellaneous Ex- penses, Department of Agriculture	\$139,603	\$96,848	\$115,848	-----	+\$19,000(1)
Transferred to:					
Dept. of State	600	600	600	-----	-----
Treasury Dept.....	134	1,600	-----	-----	-1,600(2)
Dept. of the Interior	76,970	-----	-----	-----	-----
Total obligations ..	217,307	99,048	116,448	-----	+ 17,400
<u>Unobligated:</u>					
Salary reduction impoundments	(a) 121	-----	-----	-----	-----
Other legislative impoundments	421	-----	-----	-----	-----
Unapportioned reserve	-----	16,000	-----	-----	-16,000(3)
Other amounts unobligated	49,405	-----	-----	-----	-----
Total appropriation .	267,254	115,048	116,448	+1,400	

(a) Exclusive of \$3,533 salary reduction impoundments in connection with reimbursements from other bureaus.

The increase of \$1,400 for 1936 includes:

(1) An apparent increase of \$19,000 but actual increase of \$3,000, as follows:

(a) An apparent increase of \$16,000 for moving expenses and window blinds in connection with the occupancy of additional portions of the new South Building. Due to the failure to complete the structure in accordance with the original schedule of construction, this amount (which was provided in the 1935 Act) will remain unobligated during the fiscal year 1935 (see note "3" following). It is estimated that practically a year will elapse before the completion of the final portions of the South Building, and these funds will be required during the fiscal year 1936 for the following purposes:

\$10,000 for moving the various offices and laboratories into quarters in the now uncompleted portions of the South Building (major portions of Wings 2 and 3 and the connecting headhouse on Independence Avenue between Wings 2 and 4, as indicated in the South Building floor plan shown on Page

\$6,000 for equipping the uncompleted portions of the new structure with window blinds.

The retention of this amount (\$16,000) for use during the fiscal year 1936 does not involve an actual increase in appropriation for that fiscal year.

(b) An increase of \$4,000 to provide travel expenses for the three additional investigators requested under the appropriation "Salaries, Office of the Secretary." Work of the investigational character contemplated requires considerable travel to various parts of the country and will require a minimum of \$4,000 for its successful prosecution.

(c) A decrease of \$1,000 resulting from minor savings in other items.

(2) A decrease of \$1,600 due to the transfer to the Treasury Department, under the provisions of Executive Order No. 6166, of June 10, 1933, of funds required for the purchase of supplies, equipment, etc., for the disbursing work.

(3) An apparent decrease of \$16,000, but without actual reduction in the amount to be appropriated, due to the elimination in 1936 of an unapportioned reserve for moving expenses and window blinds, new South Building. This amount was included in the 1935 Act to provide for moving expenses and window blinds in connection with the occupancy of additional portions of the new South Building. When it became apparent, however, that the structure could not be completed in accordance with the original schedule of construction, this amount (\$16,000) was set aside as an unapportioned reserve and will remain unobligated during the fiscal year 1935. These funds will be required during the fiscal year 1936 for the purposes outlined in note "1-a", above.

CHANGE IN LANGUAGE

The following changes in language under this item are recommended:

(a) The reduction from \$2,500 to \$1,500 in the authorization contained in the 1935 Act for the replacement of one passenger-carrying vehicle, in order to permit the replacement of the automobile assigned for the official use of the Forester of the Department. The latter amount will be sufficient to provide a suitable machine.

(b) The transposition, in the clause relating to the maintenance and operation of passenger-carrying vehicles, of the phrase "one motor-cycle" in order to clarify the language of the item.

(c) The substitution of "1936" for "1935" in the language relating to the maintenance and operation of the central storeroom, in order to provide for the continued operation of the storeroom during the fiscal year 1936.

WORK DONE UNDER THIS APPROPRIATION

This appropriation, as indicated by its terms, provides for a great variety of miscellaneous objects necessary in the conduct of the work of the Department, including stationery, furniture and office equipment and

supplies, lumber, hardware, glass, paint, laundry, telegraphing and telephoning, ice, postage, travel expenses, maintenance and operation of motor vehicles, freight, express and drayage charges, and miscellaneous supplies and expenses not otherwise provided for and necessary for the practical and efficient work of the Department.

It provides, also, for the compensation of such personnel of the Central Supply Section as may be engaged in the procurement, storage, issue and shipment of supplies and materials for the several bureaus of the Department, reimbursement being made to this appropriation from the funds of the bureaus for which such service is rendered. A report of the operations conducted by the central supply section is included in the Budget as provided by law.

(d) RENT OF BUILDINGS IN THE DISTRICT OF COLUMBIA

Appropriation, 1932	\$ 129,100 (a)
Appropriation, 1933	70,000
Appropriation, 1934	62,296 (b)

Appropriation, 1935	63,000
Budget Estimate, 1936	<u>63,000</u>

(a) Includes \$50,000 supplemental appropriation for 1932 carried in Second Deficiency Act, 1931, and \$9,100 carried in Second Deficiency Act, 1932.

(b) Includes \$17,296 carried in First Deficiency Act, 1934.

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
Obligated (total appropriation):					
Rent of buildings in the District of Columbia	\$62,296	\$63,000	\$63,000	-----	-----

No change is recommended in this item for 1936. Due to delays in the building program as originally scheduled, it is estimated that practically a year will elapse before completion of the final portions of the South Building. In addition, it has been necessary to house employees of the Agri-

cultural Adjustment Administration in space designed for other branches of the Department. It is not believed, therefore, that it will be possible for the Department to relinquish during 1936 any of the structures now under rental.

WORK DONE UNDER THIS APPROPRIATION

This appropriation provides funds for the rental of office, laboratory, and storage space for the several bureaus, offices, and units of the Department in the District of Columbia, for which no quarters are available in Government-owned structures.

In the following statement are shown the buildings under rental during the fiscal years 1934 and 1935, and the estimated rentals for the fiscal year 1936.

Building	Bureau Occupying Space	F.Y. 1934	F.Y. 1935	F.Y. 1936
Atlantic Building....	Forest Service.....	\$30,000	\$30,000	\$30,000
Willard Building....	Public Roads.....	15,000	15,000	15,000
McKinley Building....	Chemistry and Soils.....	14,000	14,000	14,000
2513 M St. N.W.	Weather.....	1,000	1,000	1,000
1004 Eye St. N.W. ..	Forest Service.....	1,000	1,000	1,000
918 F St. N.W.	Forest Service.....	696	696	696
920 F St. N.W.	Forest Service.....	600	600	600
Amount available for emergency rentals and reconditioning of rented quarters upon relinquishment		-----	704	704
Total		62,296	63,000	63,000

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated, 1934	Estimated Obli- gations, 1935
Public Works allotments (National Industrial Recovery Act):		
Building repairs and improvements in Washington, D. C.	\$2,718	-----
Installation of sewage treatment and disposal system at Agricultural Experiment Station, Beltsville, Md.	-----	\$170,000
Total, P.W.A. allotments	2,718	170,000

Funds Made Available by Agricultural Adjustment Administration

Agricultural Adjustment Administration appropriation; project title; objects	Obligated 1934	Estimated 1935
<u>Salaries and Expenses, Agricultural Adjustment Administration:</u>		
(1) Administrative accounting and audit- ing work for the Agricultural Adjustment Administration.....	-----	\$181,928

This allocation was made to provide for the preparation of payrolls for all of the Washington employees of the Agricultural Adjustment Administration and an average of 50,000 part-time and temporary field employees engaged in the performance of work required under the various projects of the Agricultural Adjustment Administration for crop reduction and control, and compliance; audit of travel accounts under Agricultural Adjustment Administration programs assigned to the Extension Service; and maintenance of appropriation and allotment control ledgers and cost records of expenditures by States, counties, and commodities.

EMERGENCY FUNDS -- BUREAU TOTAL

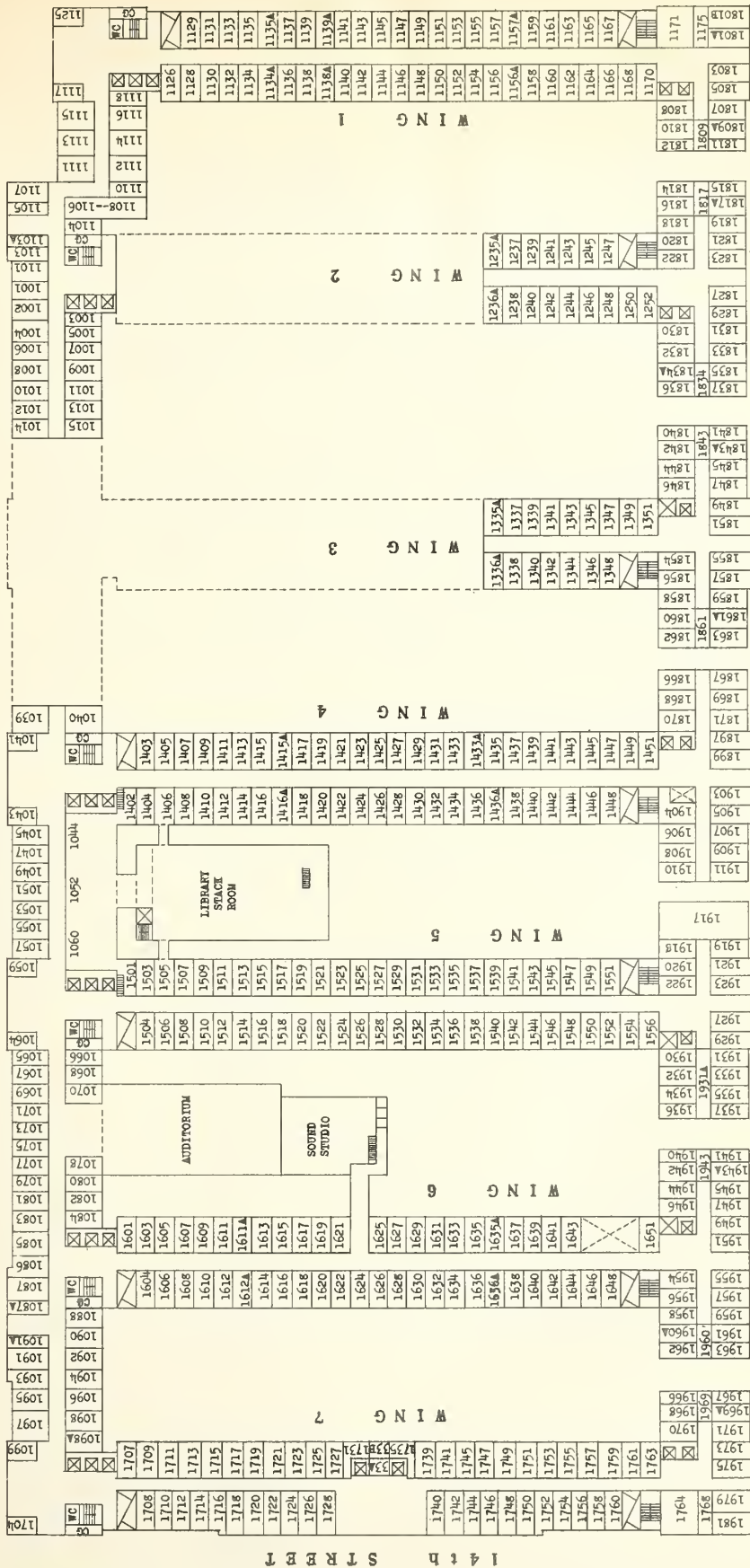
Summary

(Direct allotments)

Projects	Obligated, 1934	Estimated obligations, 1935
Public Works allotments (physical improvements)	\$2,718	\$170,000
Agricultural Adjustment Administration (transfers)	-----	181,928
Total	2,718	351,928

U. S. DEPARTMENT OF AGRICULTURE
DIVISION OF OPERATION

INDEPENDENCE AVENUE



C STREET

SOUTH BUILDING
1st FLOOR

14th STREET

(a) SALARIES AND EXPENSES

Appropriation, 1932 \$420,961
 Appropriation, 1933 410,800
 Appropriation, 1934 376,287

Appropriation, 1935 340,741 (a)
 Budget Estimate, 1936 357,882
 Increase, Budget 1936, compared with
 Appropriation, 1935 17,141 (b)

(a) Includes \$17,100 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$8,256 transferred from Bureau of Animal Industry; and (2) \$8,844 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(b) Increase of \$17,141 compared with 1935 appropriation consists of -
 5% salary restoration, 1936 (to 100%) . . + \$17,141
 Increase in working funds for 1936. . . . + 700
 Reduction: Offset of 1935 impoundment. . - 700
 + 17,141

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or Decrease 5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Office of Director..	\$20,110	\$23,173	\$24,370	\$1,195	+ \$2
Personnel and Business Administration	8,563	9,728	10,140	412	
Mail and Files.....	15,966	17,266	18,140	874	
<u>Publications:</u>					
Management.....	15,308	16,343	17,140	797	
Editorial.....	17,094	18,753	19,725	960	+ 10
Indexing	7,804	9,087	9,475	445	- 57
Illustrations.....	16,990	18,324	19,270	946	
Photographic.....	28,600	30,399	31,920	1,521	
Printing.....	9,151	11,125	11,580	519	- 64
Mailing Lists.....	6,871	8,959	9,420	461	
Distribution.....	39,248	42,387	45,120	2,176	+ 557
Addressing, Duplicating and Mailing	74,711	77,758	81,877	3,931	+ 188
Press Service.....	25,931	29,194	30,765	1,507	+ 64
Radio Service.....	26,493	27,543	28,940	1,397	
Total obligations.	312,840	340,041	357,882	(1) 17,141	+ 700 (2)
<u>Unobligated:</u>					
Salary reduction impoundments.....	15,183	---	---	---	---
Other legislative impoundments.....	8,917	700	---	---	- 700 (3)
Other amounts, unobligated.....	39,347	---	---	---	---
Total appropriation...	376,287	340,741	357,882	+ 17,141	

The increase of \$17,141 for 1936 includes:

15

(1) An increase of \$17,141 for 5% salary restoration, 1936 (to 100%).

(2) An apparent increase of \$700 in working funds for general expenses. The Office of Information formerly had \$35,000 for general expenses, but in 1934 this was reduced to \$21,983, and then to \$14,522 in 1935. The amount estimated for 1936 is \$15,222. (See note "3" below.)

(3) A decrease of \$700, offsetting 1935 impoundment. This is merely an offset for a corresponding increase estimated for obligation in 1936 under the various projects. (See note "2").

Work Done Under this Appropriation

The work under this appropriation consists of correlating and disseminating useful information developed by the economic, research, service, and regulatory programs of the Department. This educational program is carried forward through numerous radio stations, in cooperation with the press, and by issuing technical and popular publications. The Office of Information handles all problems affecting the informational activities of the Department, including the editorial, illustrating, printing, and distribution phases, and supervises the informational activities of the 19 bureaus and offices of the Department. The Office cooperates with 300 radio stations daily, which donate to the Department 35,000 hours of time annually. It prepares annually 3,000 separate manuscript radio programs, approximately 1,200 press releases, and edits about 1,600 technical and popular manuscripts. The Office cooperates with all agricultural colleges and experiment stations in maintaining an effective national policy for agricultural information; it also coordinates information of the Department with that of the Farm Credit Administration, Subsistence Homestead Division, Central Statistical Board, and other governmental agencies.

(b) PRINTING AND BINDING

16

Appropriation, 1932	\$ 1,000,000
Appropriation, 1933	925,000
Appropriation, 1934	850,000
<hr/>	
Appropriation, 1935	610,466
Budget Estimate, 1936	<u>730,466</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>120,000</u>

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease (Working Funds)
Obligated:				
Administrative Job Work and Binding:				
Binding.....	\$33,830	\$27,000	\$27,000	---
Emergency Field Printing..	7,673	5,000	5,000	---
Job Work.....	229,215	219,200	254,000	+ 34,800
Letterheads.....	4,872	5,600	5,600	---
	<u>275,590</u>	<u>256,800</u>	<u>291,600</u>	<u>+ 34,800</u>
Administrative Reports, Periodicals and Publications:				
Agricultural Situation....	3,406	3,500	3,500	---
Annual Reports.....	8,731	9,500	9,500	---
Climatological Data.....	24,368	15,000	24,000	+ 9,000
Congressional Documents...	2,403	2,500	2,500	---
Crops and Markets.....	27,029	31,000	31,000	---
Experiment Station Record.	16,060	18,500	18,500	---
Extension Service Review..	4,871	6,000	6,000	---
Farmers' Bulletin Lists...	2,951	3,000	3,600	+ 600
Forest Folders.....	7,053	5,000	7,000	+ 2,000
Indexes.....	8,799	2,716	5,516	+ 2,800
Inventory of Seeds and Plants Imported.....	1,979	2,000	2,400	+ 400
Journal of Agricultural Research	5,097	5,850	5,850	---
Monthly List of Publications.....	848	900	1,000	+ 100
Monthly Weather Review....	8,470	9,500	9,500	---
Monthly Weather Reviews Separates.....	1,373	1,500	1,500	---
Service and Regulatory Announcements.....	14,054	16,100	17,300	+ 1,200
Unnumbered Publications...	11,758	11,000	13,000	+ 2,000
Yearbook of Agriculture...	16,000	18,400	18,400	---
	<u>165,250</u>	<u>161,966</u>	<u>180,066</u>	<u>+ 18,100</u>

(b) PRINTING AND BINDING (continued)

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease (Working Funds)
Research and Technical Publications:				
Atlas of American Agriculture.....	21,847	---	---	---
Circulars.....	13,051	10,500	15,000	+ 4,500
Experiment Station Bulletins and Reports.....	1,324	1,300	1,300	---
Journal of Agricultural Research Separates.....	16,262	18,700	18,700	---
Reprints and Revisions of Former Series.....	3,868	1,500	1,500	---
Soil Surveys	46,356	40,000	54,000	+ 14,000
Statistical Bulletins....	7,093	7,000	8,500	+ 1,500
Technical Bulletins.....	30,630	30,000	36,000	+ 6,000
	140,431	109,000	135,000	+ 26,000
Popular Publications:				
Clip Sheet.....	3,117	3,100	3,100	---
Farmers' Bulletins - New	13,026	9,000	13,000	+ 4,000
Farmers' Bulletins - Reprints and Revisions..	58,280	45,000	75,000	+ 30,000
Leaflets - New.....	917	900	1,000	+ 100
Leaflets - Reprints and Revisions.....	1,492	1,400	1,700	+ 300
Miscellaneous Publications	43,590	20,000	27,000	+ 7,000
Posters.....	3,457	2,500	2,500	---
Yearbook Separates.....	316	500	500	---
	104,195	82,400	123,800	+ 41,400
Transferred to Treasury Dept.	---	300	---	- 300
Total obligations.....	685,466	610,466	730,466	+ 120,000
Unobligated:				
Legislative impoundments...	164,534	---	---	---
Total appropriation.....	850,000	610,466	730,466	+ 120,000(1)

(1) The increase of \$120,000 for printing and binding is necessary in order to meet the higher printing charges at the Government Printing Office caused by increased paper and wage costs.

The exact percentage increase in printing charges is difficult to determine - but 20 percent is apparently a fair average. Paper charges have advanced, for different grades and types, from 5 to nearly 135 percent, for an average of about 70 percent, whereas labor costs have advanced only about 10 percent; consequently, a job that requires a small amount of composition but a large quantity of paper shows a higher percentage increase in total

cost than a job with a large amount of composition and a small edition. The difficulty of determining precisely the percentage increase may be shown in another way: Government Printing Office estimates for the Monthly Weather Review totaled \$6,720.00 for the fiscal year 1934, but final bills totaled \$9,159.06 - more than a 36 percent increase; on the other hand, estimates for the Journal of Agricultural Research totaled \$4,602.89 and final bills \$5,102.63 - only slightly more than a 10 percent increase.

On May 31, 1934, on the basis of a careful study, the Department estimated that it was paying on the average 21.7 percent more for printing and binding than it did in January, 1934. The Government Printing Office, on the basis of a number of typical jobs, estimated that the Department was paying 17 percent more. On July 1, 1934, certain charges decreased slightly, but paper costs are still higher, so that recently the total costs on most periodicals increased another 5 percent. Should an additional 5 percent be added to wage costs on July 1, 1935, this again will be reflected in printing charges. The Department's estimate of \$730,466 for 1936 is, therefore, conservative - representing an increase of only 6.5 percent over its expenditures for 1934 and 19.6 percent over its appropriation for 1935.

The estimate of \$730,466 is for four classes of printing: (1) \$291,600 for job work, i.e., crop reporting forms, standard forms, blankbooks, letterheads, binding, etc.; (2) \$180,066 for administrative printing, i.e., regulatory announcements and publications, periodicals, mandatory publications, reports; (3) \$135,000 for technical publications, including soil surveys; and (4) \$123,800 for Farmers' Bulletins, Leaflets, and other non-technical publications.

These four classes of printing have had to be carried on despite the reduction of available funds from \$1,000,000 in 1932 to \$610,466 in 1935, and despite the higher schedule of printing prices since April 1, 1934. The successive reductions have had varying effects on the different classes of work. Job printing cannot be postponed to the same degree as technical and popular manuscripts. Job work in 1932, when the appropriation was \$1,000,000, cost \$280,197; in 1935, with the total printing fund at \$610,466, job work will cost about \$256,800, and expenditures can be held to this amount only by using reserve stocks, decreasing orders to uneconomical quantities, and resorting to mimeographing. In other words, in 1932 about 28 percent of the total fund was used for job work, but in 1935 more than 40 percent of the total will be used for this purpose. Meanwhile, after reducing administrative, regulatory, periodical, and technical publications to bedrock, the Department had to reduce its expenditures for popular publications from about \$244,000 in 1932 to roughly \$104,000 in 1934, and then to \$82,400 in 1935. At present, the Department is supplying only about 30 percent of the popular publications directly asked for by farmers, extension agents, and others, and it is refraining from announcing the availability of all but sales editions. Many technical manuscripts that report the results of economic and scientific research and that represent the real purpose of the public's investment in the Department of Agriculture, are being held up.

Meanwhile, farmers, public agencies, and others are calling for more assistance and information from the Department than ever before. Agencies interested in land planning want basic soil surveys. Farmers who wish to shift from cultivated crops to grass and forage, those who wish to build

subsistence homesteads, to grow their own vegetables, to can fruits and vegetables, to combat insects and diseases, to try new and less competitive crops, to check erosion, to obtain adequate diets at minimum cost, or to study fundamental economic facts, are writing to the Department for information. The Office of Information alone receives more than 4,000 such letters a day. When publications are available, these queries can be efficiently and adequately handled for about 1 1/2 cents each; when special study, compilation, and dictation are required, the cost is fully 30 cents a letter, and often more.

The printing and binding fund must meet the requirements of the 19 bureaus and offices of the Department. Of the total in 1935, for example, \$68,000 has been set aside for the Bureau of Agricultural Economics; crop reporting forms and similar job work will cost \$65,000, leaving only \$3,000 for statistical, technical, popular, and regulatory publications. \$3,000 does not suffice even for the printing needed on one project - grain standards. New standards have been put into effect and the bureau has the obligation of disseminating accurate information about these grades and promoting their observance.

Of the total, \$50,000 has been reserved for the Bureau of Chemistry and Soils. About 40 soil surveys will be completed by the bureau during the year, on which lithographic and printing charges would be about \$64,000. In addition to the surveys, the bureau must have job forms, and produces a number of fundamental, important manuscripts each year which should be printed promptly.

Only \$7,500 could be set aside for the Bureau of Home Economics for 1935. If the bureau attempted to meet the requests of relief agencies and of those in low income groups for brief, printed publications showing how to get adequate diets at minimum cost, much more would be required for printing. The bureau has tried to meet present needs in some measure by the use of press and radio releases, but requests for complete information have poured in which could be satisfied only in part by mailing mimeographed circulars.

The Bureau of Plant Industry, the Department's largest research unit, usually requires about \$40,000 for technical and popular manuscripts and job work. Its allotment in 1935 is \$25,600. Scientists in the bureau realize that technical manuscripts will usually have to be held for from several months to several years before they can be printed.

The Bureau of Entomology and Plant Quarantine has an allotment of \$22,500. This is enough only to print necessary regulatory publications, job forms, and a few technical bulletins and publications on control. In one field, for example - life studies of insects - the bureau has for several years been able to print only a small portion of the manuscripts actually prepared. The chief of the bureau has pointed out that this is not only discouraging to entomologists who make these studies, but it also hampers control work which is, of course, based upon a proper understanding of the life histories, habits, and other special characteristics of the different insects.

The Food and Drug Administration uses printing funds for job work and for regulatory announcements, which are mandatory. Higher printing costs and an increased number of court cases have made the 1935 allotment of \$9,500

inadequate for these two needs. The chief of the Administration has applied for additional funds and they will have to be squeezed out of the allocations set aside for other purposes.

These examples illustrate the general situation. There is not a unit of the Department but feels that its important, authorized projects are being hampered and made less efficient because of the printing situation. If the Department were to print all valuable technical manuscripts for the use and guidance of scientists and the most essential popular publications for farmers and others, a considerably larger appropriation would be required. The estimate of \$750,466 is submitted with full realization of the necessity for rigid economy, and in the belief that a reduction below this amount would be prejudicial to all interests the Department is expected to serve.

Change in Language

The clause "printing the proceedings of the Twelfth International Veterinary Congress to be held in the United States during the fiscal year 1935, not to exceed \$11,000," is deleted; this was a nonrecurring item in 1935. The cost of printing the proceedings has been met from the regular printing fund by postponing the publication of other material.

Work Done Under This Appropriation

The work under this appropriation consists of publishing the results of the economic, scientific, service, conservation, and regulatory work of the Department. Necessary administrative forms, letterheads, certificates, etc., are printed. The various types of published material may be grouped roughly into four classifications: Administrative job work and binding; administrative reports, periodicals, and publications; research and technical publications; popular publications. The first two groups are essential primarily to the efficient administration of the Department itself. Publications in the last two classifications are used to furnish economic, scientific, and other practical knowledge to farmers, scientists, economists, processors, manufacturers, and the general public.

LIBRARY

SALARIES AND EXPENSES

Appropriation, 1932	\$ 110,620
Appropriation, 1933	106,100
Appropriation, 1934	100,223

Appropriation, 1935	91,312 (a)
Budget Estimate, 1936	<u>99,812</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	8,500 (b)

(a) Includes \$3,500 transferred from Bureau of Animal Industry to cover
5 o/o salary adjustment for 1935 (to 95 o/o)

(b) Increase of \$8,500 compared with 1935 appropriation consists of-
5 o/o salary restoration, 1936 (to 100 o/o)..... +\$3,500
Increase in working funds for 1936 + 5,500
Reduction: Offset of 1935 salary impoundment - 500

+ 8,500

PROJECT STATEMENT

Projects	1934	1935	1936	Increase or decrease	
		(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Administrative and Business Service .	\$15,413	\$15,792	\$15,835	\$43	
Acquisition of publi- cations by purchase, gift and exchange and preparation of material	38,183	39,192	46,097	1,405	+5,500(2)
Classification, cata- loguing and indexing of publications	16,785	19,015	20,390	1,375	
Use of the Library (Readers' Division)	14,739	16,813	17,490	677	
Total obligations	84,484	90,812	99,812	3,500(1)	+5,500
<u>Unobligated:</u>					
Salary reduction im- poundments	9,306	-----	-----	-----	-----
Other legislative im- poundments	1,846	500	-----	-----	-500(3)
Other amounts un- obligated	1,520	-----	-----	-----	-----
Transferred to Dept. of Interior	3,067	-----	-----	-----	-----
Total appropriation ...	100,223	91,312	99,812	-8,500	

The increase of \$8,500 for 1936 includes:

(1) An increase of \$3,500 for 5 o/o salary restoration, 1936 (to 100 o/o).

(2) An increase of \$5,500 in the project "Acquisition of Publications".
The need for additional funds for the purchase of books and periodicals is urgent. In the fiscal year 1933, the amount available for this purpose was \$6,600 less than in 1931 and 1932, and in the fiscal year 1934 it was \$8,600 less. In addition, the depreciation of the American currency has raised a serious problem in connection with the purchase of foreign publications. The foreign periodicals ordered for the calendar years 1934 and 1935 cost over \$1,100 more than the same periodicals cost in 1933. Foreign books have also greatly increased in price. Thus the present amount available for books and periodicals is practically \$10,000 less than in the fiscal years 1931 and 1932. This very large curtailment in the Library's funds is being increasingly felt, as the unfilled requests for books and periodicals which accumulated previous to July 1934, along with the current requests since that date, have already nearly exhausted the funds for the present year, so that few requests for books and periodicals can be met during the remainder of the year. Books and other publications constitute a vital necessity in the work of the Department. The present situation is serious and the amount requested is the minimum required to meet the most urgent needs.

(3) A decrease of \$500 offsetting vacancy impoundments, 1935.

WORK DONE UNDER THIS APPROPRIATION

This appropriation is used for four main purposes, as follows: (1) For the acquisition of publications needed in the work of the Department; (2) for the work of entering these publications in the permanent catalogues and other records of the Library; (3) for the reference and bibliographical service necessary to make these publications readily available to users of the Library; and (4) for the circulation of material to Department workers and to other libraries and research institutions of the city, and to the State agricultural college and experiment station libraries.

EMERGENCY FUNDS

Direct Allotments.

	Obligated 1934	Estimated obligations, 1935
<u>Agricultural Adjustment Administration</u>		
(Transferred to Library):		
For reference work and circulation		
of books and periodicals	\$648	- - -

(a) PAYMENTS TO STATES, HAWAII, ALASKA,
AND PUERTO RICO FOR AGRICULTURAL EXPERIMENT STATIONS

Appropriation, 1932 \$ 4,357,000
 Appropriation, 1933 4,374,000
 Appropriation, 1934 4,381,000

Appropriation, 1935 4,388,000
 Budget Estimate, 1936 4,395,000
 Increase, Budget 1936, compared with
 Appropriation, 1935 7,000 (a)

(a) Increase of \$7,000 compared with 1935 appropriation consists of --
 Hawaii Station Act + 2,000
 Puerto Rico Station Act + 5,000
+ 7,000

PROJECT STATEMENT

Projects	1934 (Actual)	1935 (Estimated)	1936 (Estimated)	Increases
<u>Obligated:</u>				
Hatch Act	\$ 720,000	\$ 720,000	\$ 720,000	- - -
Adams Act	720,000	720,000	720,000	- - -
Purnell Act	2,880,000	2,880,000	2,880,000	- - -
Hawaii Station Act	26,000	28,000	30,000	+ \$2,000(1)
Alaska Station Act	15,000	15,000	15,000	- - -
Puerto Rico Station Act	- - -	25,000	30,000	+ 5,000(2)
Total obligations	4,361,000	4,388,000	4,395,000	+ 7,000
<u>Unobligated:</u> (Puerto Rico Station Act)	20,000	- - -	- - -	- - -
Total appropriation	4,381,000	4,388,000	4,395,000	+ 7,000

The increase of \$7,000 for 1936 includes:

(1) \$2,000 increase to meet the \$30,000 for 1936, authorized by the Hawaii Station Act approved May 16, 1928.

(2) \$5,000 increase to meet the \$30,000 for 1936, authorized by the Puerto Rico Station Act approved March 4, 1931.

WORK DONE UNDER THIS APPROPRIATION

The Hatch Act approved March 2, 1887 (U.S.C., title 7, secs. 362, 363, 365, 368, 377-379) appropriates \$15,000 per annum to each State for Agricultural experiment stations to "aid in acquiring and diffusing among the people of the United States useful and practical information on subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science."

The Adams Act approved March 16, 1906 (U.S.C., title 7, sec. 369) appropriates \$15,000 per annum to each State for the more complete endowment and maintenance of the State agricultural experiment stations "to be applied only to paying the necessary expenses of conducting original researches or experiments bearing directly on the agricultural industry of the United States."

The Purnell Act approved February 24, 1925, (U.S.C., title 7, secs. 361, 366, 370, 371, 373-376, 380, 382), authorized an appropriation for each State of \$20,000 for the fiscal year 1926, an increase of \$10,000 over the preceding year for each fiscal year 1927 to 1929, inclusive, and \$60,000 per annum thereafter for the more complete endowment of agricultural experiment stations and for other purposes to be "applied only to paying the necessary expenses of conducting investigations or making experiments bearing directly on the production, manufacture, preparation, use, distribution, and marketing of agricultural products and including such scientific researches as have for their purpose the establishment and maintenance of a permanent and efficient agricultural industry, and such economic and sociological investigations as have for their purpose the development and improvement of the rural home and rural life, and for printing and disseminating the results of said researches."

The Hawaii Station Act approved May 16, 1928 (U.S.C., Supp. VII, title 7, secs. 386-386b) provides that beginning with the fiscal year 1930 the Territory of Hawaii shall be entitled to share in the acts noted above and authorizes appropriations for this purpose as follows: 1930, \$15,000; 1931, \$20,000; 1932 to 1936, inclusive, \$2,000 increase each year over the preceding year; 1937, \$50,000; 1938 to 1941, inclusive, \$10,000 increase each year over the preceding year; and thereafter \$90,000 per year.

The Alaska Station Act approved February 23, 1929 (U.S.C., Supp. VII, title 7, sec. 386c) provides that the Act of March 2, 1887, as amended and supplemented, and known as the Hatch Act, and the Act approved May 8, 1914, and known as the Smith-Lever Act, be and the same are hereby extended to the Territory of Alaska: "Provided, That no appropriations shall be made under this Act until annually estimated as to funds and amounts by the Secretary of Agriculture; the estimates to be based upon his determination of the ability of the Territory of Alaska to make effective use of the funds."

The Puerto Rico Station Act approved March 4, 1931 (U.S.C., Supp. VII, title 7, secs. 386d-386f), provides as follows: "That beginning with the fiscal year ending June 30, 1933, the Territory of Porto Rico shall be entitled to share in the benefits of the Act entitled 'An Act to establish agricultural experiment stations in connection with the colleges established in the several States under the provisions of an Act approved July 2, 1862, and of the Acts supplementary thereto,' approved March 2, 1887, as amended and supplemented, and of the Act entitled 'An Act to provide for cooperative agricultural extension work between the agricultural colleges in the several States receiving the benefits of an Act of Congress approved July 2, 1862, and of Acts supplementary thereto, and the United States Department of Agriculture, approved May 8, 1914, and of Acts supplementary thereto: Provided, That the experiment station so established shall be connected with the College of Agriculture of the University of Porto Rico and it shall be conducted jointly and in collaboration with the existing Federal experiment station in Porto Rico in enlarging and expanding the work of the said Federal station on cooperative plans approved by the Secretary of Agriculture; and the Secretary of Agriculture shall coordinate the work of the Territorial stations with that of the Federal station and of the United States Depart-

ment of Agriculture in the island: Provided further, That the several experiment stations now conducted by the insular government shall be transferred to and coordinated with the experiment station of the College of Agriculture of the University of Porto Rico, together with whatever funds that are available for the support of the same, and the Secretary of Agriculture may at his discretion transfer such land, buildings, and equipment as he may deem necessary to the experiment station of the College of Agriculture of the University of Porto Rico: Provided further, That the Territory of Porto Rico shall make provision for such additional buildings and permanent equipment as may be necessary for the development of the work.

"SEC. 2. To carry into effect the above provisions for extending to Porto Rico the benefits of the Act of March 2, 1887, and supplementary Acts in the order and amounts designated by those Acts, the following sums are hereby authorized to be appropriated in addition to the amounts appropriated to the Department of Agriculture for use in Porto Rico: \$15,000 for the fiscal year ending June 30, 1933; \$20,000 for the fiscal year ending June 30, 1934; \$25,000 for the fiscal year ending June 30, 1935; \$30,000 for the fiscal year ending June 30, 1936; \$35,000 for the fiscal year ending June 30, 1937; \$40,000 for the fiscal year ending June 30, 1938; \$45,000 for the fiscal year ending June 30, 1939; \$50,000 for the fiscal year ending June 30, 1940; \$60,000 for the fiscal year ending June 30, 1941; \$70,000 for the fiscal year ending June 30, 1942; \$80,000 for the fiscal year ending June 30, 1943; and \$90,000 for the fiscal year ending June 30, 1944, and thereafter a sum equal to that provided for each State and Territory for agricultural experiment stations established under the Act of March 2, 1887.

"SEC. 3. The permanent annual appropriation provided for in section 3 of said Act of May 8, 1914, and of Acts supplementary thereto are hereby authorized to be increased by an amount necessary to carry out the provisions of this Act, but without diminishing or increasing the amount of which any State or the Territory of Hawaii is entitled under the provisions of said Act of May 8, 1914, and of Acts supplementary thereto; Provided, That for the fiscal year 1933 the total amount available to the Territory of Porto Rico under the terms of the Act of May 8, 1914, shall be \$50,000, this amount to be increased by \$10,000 annually, or such part thereof as may be necessary until the total to which Porto Rico is entitled under the provisions of this Act is reached. Participation in other Federal appropriations for cooperative extension work, including those authorized by the Act of May 22, 1928, shall be at such time and in such amounts as shall be estimated by the Secretary of Agriculture and appropriated by the Congress."

The Legislature of Puerto Rico did not accept the terms of the Act until August 16, 1933 (Joint Resolution No. 3, Puerto Rico Legislature). This prevented the certification of the funds for the fiscal years 1933 and 1934 by the Secretary of Agriculture, as the fiscal year 1933 had passed and no legislation was enacted by the Congress authorizing the Secretary to make certification for the fiscal year 1934 after July 1, 1933. The Secretary of Agriculture on June 22, 1934, certified to the Secretary of the Treasury that Puerto Rico was eligible to receive the \$25,000 for the fiscal year 1935. Plans for the expenditure of the funds were presented by the proper representatives of Puerto Rico, and approved by the Department and made in accordance with the Act of March 2, 1887, and supplementary Acts.

(b) SUPERVISION OF AND RELATIONS WITH
AGRICULTURAL EXPERIMENT STATIONS

Appropriation, 1932 \$ 169,380
Appropriation, 1933 160,734
Appropriation, 1934 148,831

Appropriation, 1935 144,180 (a)
Budget Estimate, 1936 156,235
Increase, Budget 1936, compared with
Appropriation, 1935 12,055 (b)

(a) Includes \$7,055 to cover 5 percent salary adjustment for 1935 (to 95%) as follows: (1) \$3,285 transferred from the Bureau of Animal Industry; and (2) \$3,770, the fund authorized by Sec. 21 (e) of the Act of March 28, 1934.

(b) Increase of \$12,055 compared with 1935 appropriation consists of--
5% salary restoration, 1936 (to 100%) + 7,055
Increase in working funds for 1936 + 5,200
Reduction: Offset of 1935 vacancy impoundment . - 200
+12,055

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Supervision of and relations with experiment stations.....	\$126,906	\$ 143,980	\$ 156,235	\$ 7,055(1)	+\$5,200(2)
<u>Unobligated:</u>					
Salary reduction impoundments.....	6,024	- - -	- - -	- - -	- - -
Other legislative impoundments.....	5,973	200	- - -	- - -	- 200(3)
Other amounts unobligated.....	9,928	- - -	- - -	- - -	- - -
Total appropriation.....	148,831	144,180	156,235	+ 12,055	

The increase of \$12,055 for 1936 includes:

(1) An increase of \$7,055 for 5% salary restoration, 1936 (to 100%).

(2) An increase of \$5,200 for additional stenographic and clerical help, travel, and equipment, to relieve congestion of work and meet the responsibilities for the coordination of the work of the State stations and of the Department and the State stations.

A material increase in correspondence with the 53 State and Territorial experiment stations has been necessary to aid in adjusting the research programs to coordinate with and render best service to the many new agencies and activities concerned with agriculture and rural life. Incomplete reports show that about 650 members of the State station staffs were called upon to undertake special assignments during the past fiscal year. Such assignments mean transfers, adjustments of research program and personnel, and a working out of the Federal expenditures consistent with requirements of the Federal Acts and yet most helpful in furthering the National and State emergency programs. The coordination of Federal and State efforts in research as in other lines is of increasing importance and the Office of Experiment Stations has been called upon to take a more active part than ever before, acting as a central representative of the State stations and participating with bureaus of the Department in the development of national and regional research projects and programs.

The increased activities in coordinating the research of the stations and the Department and assisting with adjustments of the State station work to best fit in with the national emergency programs have necessitated more travel for members of the technical staff of the Office. As an example, the Chief of the Office responded within a few months to three calls in connection with the coordination of a program for the eight State stations, the Department, and the Tennessee Valley Authority. With the facts available to the technical staff of the Office and participating as it does through administration of Federal-grant funds to every State, the Office of Experiment Stations is frequently in a position to render helpful service which cannot well be provided by any other agency.

(3) A decrease of \$200 offsetting 1935 vacancy impoundments. This decrease is an offset for a corresponding increase estimated for obligations in 1936. (See note 2).

WORK DONE UNDER THIS APPROPRIATION

The primary functions and work under this appropriation are:

1. Administration of the Acts of Congress (Hatch Act of 1887, Adams Act of 1906, Purnell Act of 1925, and acts amendatory or supplementary thereto, Hawaii Station Act of 1928, Alaska Station Act of 1929, and Puerto Rico Station Act of 1931) making appropriations for the support of agricultural experiment stations in the States and Territories.
2. Assistance in coordinating the research work of the Department of Agriculture with that of the State and Territorial agricultural colleges and experiment stations.
3. Preparation of the "Experiment Station Record."
4. The administration and direction of departmental insular experiment stations--one in Puerto Rico and one in Hawaii.
5. To act as a clearing house for inquiries, running into thousands and coming from all parts of the world, on matters pertaining to agricultural experiment stations and the work of these stations in the United States.

Administration of the Acts granting Federal funds to States and Territories involves supervision of the funds, close advisory relations with the stations as to research for which the funds are expended, annual examination of the work and expenditures of each State station, and preparation of report to Congress on the work and expenditures of the stations as called for in the Acts.

The Federal grants are largely expended on research which is outlined and submitted to the Office of Experiment Stations for advisory suggestions and approval in advance of expenditures. Annual budgets of proposed expenditures on the Federal funds are submitted by each station for review and approval of proposed work and expenditures at the beginning of the fiscal year. Changes and adjustments in work to best meet the State needs are submitted throughout the year. About 2,000 research projects were thus submitted for review and approval during the fiscal year 1934.

To enable the Secretary of Agriculture to ascertain and certify that the funds are being expended in accordance with provisions of the Federal Acts, a representative, or representatives, of the Office of Experiment Stations visits each of the 50 State stations annually and spends from 3 to 10 days reviewing the expenditures and the work under each research project. In this connection, the research on State funds as well as that on Federal funds is reviewed to better enable suggestions as to cooperation and coordination to avoid duplication.

Assistance in coordinating the research of the Department of Agriculture with that of the State and Territorial stations and in coordinating the research work among State stations is constantly in mind when the proposed research projects are reviewed for approval on Federal funds and when the work and expenditures of each station are reviewed and discussed with the State station directors and research staffs. Through personal conferences and committees having to do with research, close advisory relations are maintained with bureaus of the Department. Every opportunity is taken to promote effective cooperation between and among the State stations, and between the State stations and the Department. During the fiscal year 1934, approximately 800 cooperative investigations were under way between State stations or State stations and the Department of Agriculture which were carefully planned by the cooperating agencies and made a matter of written cooperative agreement. These cooperative agreements were reviewed by the Office of Experiment Stations and made a matter of record, available to the Department for purposes both of administration and coordination of research activities.

The Experiment Station Record was established in 1889 as a part of the Federal-State joint participation in establishing and maintaining agricultural experiment stations. Its purpose is to make available to staff members of all stations and the Department, as far as funds permit, abstracts of current published results of research in this country and other countries promptly as an aid in planning research, avoiding duplication, and in coordinating research effort. As an illustration, approximately 10,000 books and 88,000 periodicals were examined during the fiscal year 1934. About 29,000 were selected for examination by specialists of the Office and abstracts of about 6,800 articles were prepared and issued in the Experiment Station Record. Two volumes of the Record, consisting of 12 issues, each

150 pages, were published. Few, if any, of the stations have available all the current publications reporting results of research. Abstracting by the Office of Experiment Stations as a central agency avoids the necessity of much duplicate abstracting by the several thousand research workers. The abstracts involve translations from as many as 12 or more languages.

Administration of the Federal stations in Puerto Rico and Hawaii involves approval of budgets, expenditures, and research projects, review, editing, and approval of publications, and general administrative direction. During the past few years there has developed, in addition, a responsibility for coordination of these Federal stations and their work with the Territorial experiment stations and their research. Hawaii, under the Hawaii Station Act of May 16, 1928, and Puerto Rico, under the Puerto Rico Station Act of March 4, 1931, now receive the benefit of the funds under the Hatch and supplemental Acts. The Acts granting these funds to the Territories, however, provide, that the Secretary of Agriculture shall coordinate the work of the Territorial stations and the work of the Federal stations.

Inquiries pertaining to agricultural experiment stations in the United States come to the Office of Experiment Stations from all parts of the world. The number amounts to thousands in the course of a year. Requests for information about Alaska, Guam, the Virgin Islands, Puerto Rico, and Hawaii alone have probably exceeded 1,000 in the past year. Inquiries as to organization, personnel, publications, relationships, and work of the stations are many and varied in character. To meet this service in behalf of the Department, an up-to-date list of organization and personnel of the State stations is maintained and a revised list is published annually. Monthly lists of experiment station publications are mimeographed for use of libraries and to meet inquiries for this information. Other lists, indexes, and compilations of information are prepared as a means of rendering service at a minimum cost. During the past year a revised list of agricultural research institutions and library centers in foreign countries was prepared to aid the experiment stations in exchange of information with research agencies throughout the world. Inquiries totaling in the thousands must be answered by individual letters and conferences.

INSULAR AGRICULTURAL EXPERIMENT STATIONS

Appropriation, 1932	\$ 230,030
Appropriation, 1933	133,560
Appropriation, 1934	78,130
<hr/>	
Appropriation, 1935	68,144 (a)
Budget Estimate, 1936	<u>69,311</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>+ 1,167 (b)</u>

(a) Includes \$3,167 to cover 5 percent salary adjustment for 1935 (to 95%) as follows: (1) \$1,476 transferred from the Bureau of Animal Industry; and (2) \$1,691 from the fund authorized by Sec. 21 (e) of the Act of March 28, 1934.

(b) Increase of \$1,167 compared with 1935 appropriation consists of--
 5% salary restoration, 1936 (to 100%) +\$3,167
 Decrease in working fund, Hawaii Station, for 1936 -2,000
+1,167

PROJECT STATEMENT

Projects	1934	1935		1936		Increase or decrease	
		(Estimated)	(Estimated)	(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
<u>Obligated:</u>							
Hawaii Station.....	\$32,344	\$ 32,614	\$ 32,066	\$ 32,066	\$ 1,452	\$ 1,452	-\$2,000(2)
Puerto Rico Station...	37,629	35,530	37,245	37,245	1,715	1,715	- - -
Total Obligations....	69,973	68,144	69,311	69,311	3,167(1)	3,167(1)	- 2,000
<u>Unobligated:</u>							
Salary reduction im-							
poundment.....	5,578	- - -	- - -	- - -	- - -	- - -	- - -
Other amounts unobli-							
gated.....	2,579	- - -	- - -	- - -	- - -	- - -	- - -
Total appropriation....	78,130	68,144	69,311	69,311	+1,167	+1,167	

The increase of \$1,167 for 1936 includes:

(1) An increase of \$3,167 for 5% salary restoration, 1936 (to 100%).

(2) A decrease of \$2,000 in the appropriation for the Hawaii Station which is offset by the increase of \$2,000 for 1936 under the Hawaii Station Act under "Payments to States, Hawaii, " etc.

WORK DONE UNDER THIS APPROPRIATION

The agricultural experiment stations of the Department in Hawaii and Puerto Rico were established to determine the agricultural possibilities of the two Territories, to improve and diversify their agriculture, and to develop types of agriculture adapted to different regions. The Hawaii Station Act of May 16, 1928, and the Puerto Rico Station Act of March 4, 1931, provide for the coordination of these stations and their work with the stations of the Territorial agricultural colleges.

Hawaii Station--This station is now coordinated with the station of the University of Hawaii under one directing head. The work of the station is concerned primarily with problems relating to the diversification of agriculture and establishment of additional agricultural enterprises suitable to conditions of the respective islands. The research includes soil and field crop work, horticultural investigations, problems of dairying and livestock management, fertilizer and management problems of coffee, vegetable and truck crop studies, and chemical and other studies aimed to assist in the development of new enterprises, including avocados, Macadamia nuts, the manufacture of starch from edible canna, and plant introductions in cooperation with the U. S. Department of Agriculture.

Puerto Rico Station--The Federal station in Puerto Rico is located at Mayaguez. The Territorial station has headquarters at Rio Piedras, near San Juan. An additional Territorial station is at Isabela. Much effort is now given to the coordination of work by these three stations. In working out a coordinated plan, provision is being made for the Territorial station to assume additional responsibility for research on problems of Puerto Rican agriculture as the Federal-grant funds to the Territory are increased. For example, the Federal station at Mayaguez has been working on problems pertaining to coffee, which is a major crop of the islands. A cooperative program has now been worked out in which the two stations will participate, with the Territorial station gradually taking over research in this field. The Federal station has made marked progress in improvement of sugarcane varieties through breeding and selection. The Territorial station had made less progress and this project is being continued by the station at Mayaguez and not duplicated by the Territorial station. The Federal station at Mayaguez is continuing its limited amount of work on field crops, but the plan is to develop a cooperative program with the idea that the Territorial station will take over this line of work within a few years. The Federal station at Mayaguez is continuing investigations on internal parasites and diseases of livestock. The Territorial station is doing nothing in this field. During the present year the Federal station has assisted in every way possible in the development of the Territorial program of relief, rehabilitation, and readjustment in agriculture. It is probable that additional assistance and work may be assigned to this station in connection with the program to be developed for agricultural adjustment as a result of the sugar processing tax.

During the year the Federal station and its facilities were used in connection with investigations on fruit flies and by men engaged in plant quarantine service on behalf of continental United States. The aim was to use the station facilities to the maximum in promoting coordination and cooperation in the Federal activities in the island, whether they are undertaken on behalf of continental United States or are problems of Puerto Rico.

EMERGENCY FUNDS

Direct Allotments

	Obligated 1934
Public Works Allotments (National Industrial Recovery Act):	
Roadway at Hawaii Agricultural Experiment Station....	1,000
Water storage tank at Hawaii Agricultural Experiment Station.....	198
Replacement of roadways at Puerto Rico Agricultural Experiment Station.....	1,500
Repair and extension of fences at Puerto Rico Agricultural Experiment Station.....	900
Clearing land for experiment purposes.....	1,350
Total, P.W.A. allotments.....	4,948

PASSENGER-CARRYING VEHICLES

The authorization for purchase of passenger-carrying vehicles contemplates an increase of \$750 (\$750 in 1935; \$1,500 in 1936) for this purpose. As shown by the Budget schedule, the \$1,500 authorization will permit the purchase of one car each for the Hawaii and Puerto Rico stations. It is expected that both stations will be called upon to undertake a considerable amount of work in connection with the readjustment of agriculture under the provisions of the Sugar Processing tax legislation, in which case an additional car will be needed at each station to make possible the necessary travel in connection with the additional work and the calls on the technical staff for assistance.

EXTENSION SERVICE

Payments to States, Hawaii, Alaska and Puerto Rico
for Agricultural Extension Work.

General Statement

Funds available for direct payments to the States, Hawaii, Alaska and Puerto Rico for cooperative agricultural extension work for 1935 total \$8,748,096, including the automatic increase of \$10,000 in the permanent annual appropriation (Smith-Lever Act), provided by the Act of March 4, 1931. (Public No. 486 - 71st Congress), entitled, "An Act to coordinate the Agricultural experiment station work and to extend the benefits of certain Acts of Congress to the Territory of Puerto Rico". Subsequent to the preparation of the 1935 Budget, in which provision was made for the reduction of 25% of the permanent annual appropriation (Smith-Lever Act) in accordance with Section 18 of Executive Order No. 6166, the full amount of the appropriation was restored by the issuance of Executive Order No. 6586, of February 6, 1934, section 18 of the original order being revoked thereby, and the total amount of the appropriation being increased from \$3,507,072 to \$4,676,096, the total available for 1935 under the Smith-Lever Act.

In addition to the sums indicated above for 1935, there was available to the States, Hawaii, and Puerto Rico from appropriations direct to the Department of Agriculture, (Farmers' Cooperative Demonstrations and Clarke-McNary forestry funds) a total of \$263,420, making the total funds available to the States and Territories for 1935, \$9,011,516.

Under the estimate for 1936, the proposed payments to the States, Hawaii, Alaska, and Puerto Rico, total \$8,758,096 including the automatic increase of \$10,000 (for Puerto Rico) in the permanent annual appropriation (Smith-Lever Act). The Department's contributions to States and Territories under the appropriation, Farmers' Cooperative Demonstrations, will be reduced by \$14,500, and the Departmental funds increased by this amount in order to take care of additional clerical expense in the Washington offices, caused primarily by emergency activities. The allotment from direct Department funds (Farmers' Cooperative Demonstrations and Clarke-McNary forestry funds) will be \$250,240, making a grand total of \$9,008,336 of Federal funds available for the States and Territories. The use of this money is indicated in greater detail in Tables 1 and 2.

Table 1. Statement showing appropriation items and amounts available to the States in 1934, 1935, and estimated for 1936.

Item	Appropriation 1934	Appropriation 1935	Budget Estimate 1936
<u>Payments to States, Hawaii, Alaska and Puerto Rico for Agricultural extension work:</u>			
Supplementary Smith-Lever.....	\$1,580,000	\$1,580,000	\$1,580,000
Capper-Ketcham (Act of May 22, 1928).....	1,480,000	1,480,000	1,480,000
Alaska (Act of February 23, 1929)....	12,000	12,000	12,000
Additional Cooperative Extension Work.....	1,000,000	1,000,000	1,000,000
Total Agricultural Act.....	4,072,000	4,072,000	4,072,000
Permanent Annual Smith-Lever Appropriation.....	4,666,096	4,676,096	4,686,096
Total payments made directly to States..	8,738,096	8,748,096	8,758,096
<u>Amounts allotted to States but disbursed by Department of Agriculture:</u>			
Farmers' Cooperative Demonstrations: Cooperative Extension Work.....	724,838	(1)214,500	(1)200,000
Cooperative Farm Forestry (Clarke- McNary Act of June 7, 1924).....	45,335	48,920	50,240
Total allotments to States by Department	(2)770,173	(2)263,420	250,240
Total of direct payments to States and Territories, and Department allotments to States and Territories.....	9,508,269	9,011,516	9,008,336

(1) Decrease of \$14,500 in State allotments (1936 below 1935) is made to provide for an increase of like amount in Departmental funds to take care of additional clerical assistance due primarily to emergency work. This change involves no increase in the total appropriation for F.C.D.

(2) Subject to legislative salary deduction.

With the exception of the \$1,000,000 designated for "Additional Cooperative Extension Work," and funds allotted by this Department under the appropriations entitled "Farmers' Cooperative Demonstrations" and "Cooperative Farm Forestry", the major part of the extension money is distributed on the basis of rural population, computed on the proportion that the rural population of each State bears to the total rural population of the States. The \$1,000,000 appropriation for "Additional Cooperative Extension Work" provides for payment to each State and the Territory of Hawaii in accordance with the apparent need as determined by the Secretary of Agriculture. Funds directly disbursed by the Department are also allotted at the discretion of the Secretary. The following table indicates the funds paid to the States and Territories that require offset by State money, those where such offset is not required, and the basis of allotment:

Table 2. Statement of direct payments to States, Hawaii, Alaska, and Puerto Rico, indicating those requiring offset by States and Territories, those not requiring such offset and basis of distribution, as estimated for 1936.

Item	Total Estimate 1936	Amount to be paid without offset	Amount requiring offset and basis of allotment	
			Amount	Basis of distribution
(1) Permanent Annual Appropriation (Smith- Lever Act).....	\$4,686,096	500,000 (a)	4,186,096	Rural population
(2) Supplemental Smith- Lever Act.....	1,580,000	- - -	1,580,000	Rural population
(3) Capper-Ketcham Act..	1,480,000	980,000 (b)	500,000	Rural population
(4) Alaska Act.....	12,000	10,000 (c)	2,000	Rural population when recommended by Department.
(5) Additional Coopera- tive Extension Work.	1,000,000	1,000,000	- - -	Determined by Secretary of Agriculture
Total, direct Federal payments.....	8,758,096	2,490,000	6,268,096	

(a) \$10,000 to each State, Hawaii, and Puerto Rico.

(b) \$20,000 to each State and Hawaii.

(c) Based on special authorization.

The Federal funds for cooperative agricultural extension work are supplemented by funds from within the States estimated at \$11,041,632, thus making available from Federal, State, and local sources for extension work during 1935 a sum approximating \$20,041,909. (See Table 3).

Table 3. Total allotments to States and Territories from Federal (including U.S.D.A.) and State sources for extension work.

State	Total	Total Federal Funds	Total within the States
Alabama	\$ 559,560.26	\$ 286,230.13	\$ 273,330.13
Arizona	120,700.77	76,764.77	43,936.00
Arkansas	444,002.07	239,757.07	204,245.00
California	706,532.50	220,543.31	485,989.19
Colorado	196,932.17	109,462.17	87,470.00
Connecticut	247,373.15	95,006.15	152,367.00
Delaware	62,389.06	44,214.53	18,174.53
Florida	296,069.96	138,139.98	157,929.98
Georgia	651,168.93	321,663.59	329,505.40
Idaho	175,993.08	85,803.01	90,190.07
Illinois	861,778.92	293,889.46	567,889.46
Indiana	542,845.01	225,552.28	317,292.73
Iowa	764,067.15	232,675.51	531,391.64
Kansas	547,661.48	191,010.53	356,650.95
Kentucky	483,401.56	275,200.78	208,200.78
Louisiana	441,109.69	207,935.66	233,174.03
Maine	182,152.14	99,576.07	82,576.07
Maryland	313,310.42	126,922.53	186,387.89
Massachusetts	411,093.71	92,575.96	318,522.75
Michigan	522,791.84	232,249.09	290,542.75
Minnesota	400,504.96	209,424.98	191,079.98
Mississippi	543,252.60	259,239.60	284,013.00
Missouri	473,504.25	270,004.25	203,500.00
Montana	230,419.83	99,689.88	130,730.00
Nebraska	323,029.12	161,094.12	161,935.00
Nevada	106,943.90	49,489.95	57,453.95
New Hampshire	186,082.76	64,662.25	121,420.51
New Jersey	343,831.49	127,632.59	216,198.90
New Mexico	144,829.88	80,294.94	64,534.94
New York	1,324,376.24	295,252.86	1,029,123.38
North Carolina	611,607.22	339,303.61	272,303.61
North Dakota	231,047.38	121,842.88	109,204.50
Ohio	687,027.49	300,268.49	386,759.00
Oklahoma	457,581.14	244,540.57	213,040.57
Oregon	297,340.91	107,714.07	189,626.84
Pennsylvania	805,156.10	396,506.55	408,649.55
Rhode Island	60,720.98	38,872.75	21,848.23
South Carolina	352,500.00	208,500.00	144,000.00
South Dakota	173,481.80	114,240.90	59,240.90
Tennessee	468,728.18	269,864.09	198,864.09
Texas	1,085,822.49	501,272.77	584,549.72
Utah	132,191.67	75,783.67	56,408.00
Vermont	158,743.16	74,239.04	84,504.12
Virginia	551,183.29	259,265.29	291,918.00
Washington	2065,696.68	128,848.34	77,848.34
West Virginia	363,311.11	187,054.11	176,257.00
Wisconsin	482,628.78	213,764.39	206,864.39
Wyoming	162,053.30	64,088.39	57,964.91
Alaska	15,000.00	12,000.00	3,000.00
Hawaii	82,358.70	58,129.35	24,229.35
Puerto Rico	151,015.00	72,220.00	78,795.00
Total	20,041,909.39	9,000,277.26	11,041,632.13

As the major purpose of these payments of money to States is the employment of extension workers in counties and at the colleges, the following comparative statement is submitted showing agents employed:

Table 4. Comparison of number of extension field agents employed June 30, 1933, June 30, 1934, and October 31, 1934.

	June 30, 1933	June 30, 1934	Oct. 31, 1934
<u>State Supervisors</u>	475	512	536
<u>Subject-Matter Specialists:</u>			
Full-time specialists.....	863	853	860
Part-time specialists.....	216	258	305
Total specialists.....	1,079	1,111	1,165
Total with headquarters at colleges...	1,554	1,623	1,701
<u>County Workers:</u>			
Agricultural Agents.....	2,450	3,167 (a)	3,183 (a)
Home demonstration agents.....	1,221	1,267	1,265
Boys' and girls' club agents.....	201	185	193
Negro extension agents.....	314	307	309
Total county workers.....	4,186	4,926	4,950
Total.....	5,740	6,549	6,651

(a) Increase in number of agents in counties is due to cooperative arrangements with the Agricultural Adjustment Administration.

Number of counties in United States..... 3,076
 Approximate number of counties now having one or more agents..... 2,800

A discussion of the activities under the various appropriation items and tabulation of amounts involved under each, follows:

(a) COOPERATIVE AGRICULTURAL EXTENSION WORK
(Supplemental Smith-Lever Appropriation)

Appropriation, 1932 \$ 1,580,000
 Appropriation, 1933 1,580,000
 Appropriation, 1934 1,580,000

Appropriation, 1935 1,580,000
 Budget Estimate, 1936 1,580,000

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)
Payments to States from Supplemental Smith-Lever Funds.....	\$ 1,580,000	\$1,580,000	1,580,000

WORK DONE UNDER THIS APPROPRIATION

These funds supplement the permanent annual appropriation provided under the Smith-Lever Act (May 8, 1914, Stat. 372-374, U.S.C. 114). Like the Smith-Lever Funds, they are paid directly to the State colleges of agriculture as Federal Aid for the promotion of extension work in agriculture and home economics. This appropriation is divided among the States and Hawaii in the proportion that the rural population of each bears to the total rural population of the States and Hawaii, and is available only when offset with funds from within the States. This item contains a provision that not more than \$300,000 may be expended for purposes other than salaries of extension agents in counties. As \$300,000 is approximately 19% of the total appropriation, this means that approximately 81% of the funds must be expended for salaries of county extension agents. The State allotments are paid directly to a designated officer in the State and are disbursed in accordance with budgets and programs of work submitted by the State directors of extension and approved by the Secretary of Agriculture. Expenditures by the States from this and other cooperative extension appropriations are subject to an annual inspection by representatives of the Department.

(b) COOPERATIVE AGRICULTURAL EXTENSION WORK
(Capper-Ketcham Act)

Appropriation, 1932	\$ 1,480,000
Appropriation, 1933	1,480,000
Appropriation, 1934	1,480,000

Appropriation, 1935	1,480,000
Appropriation, 1936	<u>1,480,000</u>

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)
Payments to States from Capper-Ketcham Funds.....	\$1,480,000	\$1,480,000	\$1,480,000

WORK DONE UNDER THIS APPROPRIATION

This appropriation is specifically authorized by the provisions of the Capper-Ketcham Act of May 22, 1928 (45 Stat., 711, 712). This Act authorizes an appropriation of \$980,000 to be divided at the rate of \$20,000 to each State and to Hawaii, without requirement for State offset, and an additional \$500,000 to be divided among the States and Hawaii on the basis of rural population. It provides that at least 80 percent of the funds appropriated under this authorization shall be expended for salaries of county extension agents and that the extension agents appointed under its provisions shall be men and women in fair and just proportions.

(c) EXTENSION OF SMITH-LEVER ACT TO ALASKA

Appropriation, 1932	\$ 10,000
Appropriation, 1933	12,000
Appropriation, 1934	12,000

Appropriation, 1935	12,000
Budget Estimate, 1936	<u>12,000</u>

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)
Payment to Alaska for Cooperative Agricultural Extension Work.....	\$12,000	\$12,000	\$12,000

WORK DONE UNDER THIS APPROPRIATION

This appropriation is authorized by the Act approved February 23, 1929 entitled "An Act to extend the benefits of the Hatch Act and the Smith-Lever Act to the Territory of Alaska" (U.S.C. Supp. VI, title 7, Sec. 386c). The extension work in agriculture and home economics is of a similar nature to that which is being conducted in the States, modifications being made to suit local conditions. Experiment stations have been maintained by the Federal Government in Alaska for many years, but extension work was not systematically begun among farmers until 1931.

(d) ADDITIONAL COOPERATIVE AGRICULTURAL EXTENSION WORK

Appropriation, 1932	\$ 1,000,000
Appropriation, 1933	1,000,000
Appropriation, 1934	1,000,000

Appropriation, 1935	1,000,000
Budget Estimate, 1936	<u>1,000,000</u>

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)
Payments to States for additional Cooperative Agricultural Extension Work.....	\$1,000,000	\$1,000,000	\$1,000,000

WORK DONE UNDER THIS APPROPRIATION

This project provides for additional cooperative agricultural extension work including employment of specialists in economics and marketing, to be allotted by the Secretary of Agriculture to the several states and

the Territory of Hawaii in such amounts as he may deem necessary to accomplish such purposes.

These funds supplement the permanent annual appropriation provided under the Smith-Lever Act (Act of May 8, 1914), as well as those funds provided under the Capper-Ketcham Act, (Act of May 22, 1928). Like the Smith-Lever and Capper-Ketcham Funds, they are paid direct to the State Colleges of agriculture as Federal aid for extension work in agriculture and home economics. However, as already indicated, the payments of funds to the States, instead of being based upon the ratio that the rural population of each State bears to the total rural population of the States and Hawaii, are subject to determination by the Secretary of Agriculture as to the amount that he may deem necessary to accomplish the best results in each State.

Direct Appropriations to the Department.

(e) GENERAL ADMINISTRATIVE EXPENSES

Appropriation, 1932.	\$ 15,260
Appropriation, 1933.	15,000
Appropriation, 1934.	13,846

Appropriation, 1935.	13,047 (a)
Budget Estimate, 1936.	<u>13,668</u>
Increase, Budget 1936, compared with Appropriation, 1935.	<u>621 (b)</u>

(a) Includes \$621 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$270 transferred from Bureau of Animal Industry; and (2) \$351 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(b) Increase of \$621 compared with 1935 appropriation represents 5% salary restoration, 1936 (to 100%).

PROJECT STATEMENT

Projects	1934	1935	1936	Increase or decrease	
		(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
Obligated:					
General Administrative Expenses.....	\$10,568	\$13,047	\$13,668	(1) \$621	- - -
Unobligated:					
Salary reduction impoundments.....	565	- - -	- - -	- - -	- - -
Other legislative impoundments.....	2,698	- - -	- - -	- - -	- - -
Other amounts unobligated.....	15	- - -	- - -	- - -	- - -
Total appropriation..	13,846	13,047	13,668	+ 621	

(1) The increase of \$621 is for 5% salary restoration, 1936 (to 100%).

WORK DONE UNDER THIS APPROPRIATION

This appropriation covers the general expenses of the Office of the Director of Extension Work except the Director's salary, which is paid by the Office of the Secretary. The principal items of expense are for the clerical staff of the Director's immediate office, their office supplies and the travel expenses of the Director.

(f) FARMERS' COOPERATIVE DEMONSTRATIONS

Appropriation, 1932 \$1,574,430
 Appropriation, 1933 1,583,320
 Appropriation, 1934 1,420,189

Appropriation, 1935 716,898 (a)
 Budget Estimate, 1936 747,248
 Increase, Budget 1936, compared with
 Appropriation, 1935 30,350 (b)

(a) Includes \$32,250 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$14,029 transferred from Bureau of Animal Industry; and (2) \$18,221 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(b) Increase of \$30,350 compared with 1935 appropriation consists of -
 5% salary restoration, 1936 (to 100%) +32,250
 Reduction: Continuation of 1935 impoundment. - 1,900
+30,350

PROJECT STATEMENT

Projects	1934	1935		1936		Increase or decrease	
		(Estimated)	(Estimated)	(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
Obligated:							
Cooperative Extension Work.....	\$982,430	\$609,080	\$636,958	\$27,878	- - -		
Economic Extension Work.....	23,159	41,492	43,245	1,753	- - -		
Motion Pictures.....	59,388	64,426	67,045	2,619	- - -		
Total obligations....	1,064,977	714,998	747,248	(1)32,250	- - -		
Unobligated:							
Salary Reduction impoundments.....	100,194	- - -	- - -	- - -	- - -		
Other legislative impoundments.....	14,758	1,900	- - -	- - -	-1,900(2)		
Other amounts unobligated.....	240,260	- - -	- - -	- - -	- - -		
Total appropriation....	1,420,189	716,898	747,248	+ 30,350			

The increase of \$30,350 for 1936 includes:

- (1) An increase of \$32,250 for 5% salary restoration, 1936 (to 100%).
- (2) A reduction of \$1,900, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General: This appropriation provides funds for administration of co-operative extension work conducted in continental United States, and the Territories of Alaska and Hawaii, and the maintenance of a professional and clerical staff and necessary business activities in the District of Columbia. It supplements by allotment of money to States and Territories, the funds provided by other legislation for cooperative agricultural extension work, and provides allotments for the support of motion picture, economic extension and reclamation demonstration activities. This appropriation is, therefore, a very necessary and vital part of the cooperative agricultural extension system, and its continuance is necessary to the proper conduct of this important phase of the Department's work.

Cooperative Extension Work: A part of the funds allotted to this project are utilized for making allotments to States and Territories for the employment of extension agents, supplementing funds available to the States and Territories under other extension acts. The remainder of the allotment is utilized for the maintenance of the Divisions of Administration and Cooperative Extension in Washington, and the necessary professional and clerical staff. This office is responsible for the administration of all cooperative extension work conducted by the Department in conjunction with the land-grant colleges. Its staff assists the States in the organization of county agent, home demonstration and club work, and makes available to the States, the results of the investigational work of the Department affecting agriculture and home economics. Budgets, projects, and plans of work submitted by the States are reviewed, approved, or revised, and expenditures of funds within the States are annually inspected. The continuance of this project is essential to the administration and development of cooperative extension work throughout the country.

Economic Extension Work: Under this project special attention is given to the extension of information to the States along the lines of co-operative marketing and farm management. The results of investigations of, and information available from, the Bureau of Agricultural Economics and State experiment stations, particularly along the line of price trends, and agricultural outlook, and intentions of farmers to plant crops and breed livestock, foreign and domestic supplies and demands for agricultural products, and other data of this nature, are assembled and made available to the State extension services in an effort to bring before the farm public, through the extension system, the principles and advantages of co-operative marketing, as well as to present to them economic information which will enable them to obtain a better return from their crops and livestock. This unit also cooperates in the work of the Farm Credit Administration and the Agricultural Adjustment Administration. Continuation of the work under this project is considered essential as an important supplement to other lines of extension work for the improvement of agriculture.

Motion Pictures: Under this project the production and loan of motion pictures by the Department is conducted. These educational motion pictures are made available for general public use as well as by officials and employees of the Department and related institutions. The films deal with important lines of work in which the Department and cooperating State institutions are engaged. Their aim is to acquaint the public with the methods and significance of important activities, to gain public cooperation, and by making common property of the results of scientific investigations, to spread knowledge of improved methods in agriculture, forestry, road building, rural engineering, and kindred pursuits. These films are designed to aid in the work of the extension and other field workers of the Department and cooperating State institutions, and their primary use is by or under the supervision of such workers. With the present appropriation the number of motion pictures available is not sufficient to meet all the demands from extension workers, but their needs are given first consideration, and insofar as possible, copies of films are made available also to the general public upon request. The continuation of this motion picture work is of great importance to the 6,600 extension field employees and to the work of the Department as a whole.

EMERGENCY FUNDS

Direct Allotments

Funds Made Available by Agricultural Adjustment Administration

Agricultural Adjustment Administration appropriation: Project title: objects.	Obligated, 1934	Estimated. obligations. 1935
<u>Advances to Agricultural Adjustment Administration:</u>		
(1) 1st Cotton Campaign: For employment of Emergency Agents, Committeemen, Clerks, etc., and for travel expenses, supplies, telegraph, etc., necessary to conduct an educational campaign to inform farmers of Cotton States, the provisions of the Agricultural Adjust- ment Act relating to the Cotton Control program.....	\$2,849,490	- - -
(2) 1st Wheat Campaign: For employment of Emer- gency Agents, Clerks, and for travel ex- penses, supplies, telegraph etc., necessary to conduct an educational campaign to ex- plain to wheat farmers the provisions of the Agricultural Adjustment Act relating to the benefits of the Wheat Acreage Control pro- gram.....	896,250	- - -

Agricultural Adjustment Administration appropriation; project title; objects.	Obligated, 1934.	Estimated obligations, 1935.
(3) 1st Tobacco Campaign: For employment of Emergency Agents, Committeemen, Clerks, and for travel expenses, supplies, telegraph, etc., necessary to conduct an educational campaign to explain to tobacco farmers the provisions of the Agricultural Adjustment Act relating to the benefits of the Tobacco Acreage Con- trol programs.....	\$ 119,120	- - -
(4) Cotton and Tobacco Committeemen: For employ- ment of Committeemen to assist in contacting growers in connection with crop acreage re- ductions in cotton and tobacco.....	2,393,285	- - -
(5) Combined commodity Budget (Cotton, Wheat, Tobacco, Corn and Hogs): For the employment of Emergency Agents, Clerks and for travel expenses, telegraph, etc., necessary to con- duct an educational campaign for the reduc- tion of cotton, corn, tobacco and wheat acre- ages and in the production of hogs.....	2,300,000	- - -
(6) Combined Commodity Budget (Cotton, Wheat, Tobacco, Corn and Hogs, Sugar, and Peanuts): For the employment of Emergency Agents, Clerks, etc., and for travel expenses, telegraph, etc., necessary to conduct an educational campaign for the reduction of cotton, corn, tobacco, wheat, sugar and peanut acreages, and in the production of hogs.....	- - -	\$6,009,749
(7) Compliance Supervisors, Supplies, etc., Cotton and Tobacco: For the employment of compliance supervisors to measure acreage and other work incident to clearing certification forms in Cotton and Tobacco adjustment programs, pur- chase of necessary measuring equipment, supplies, etc.	- - -	2,643,810
(8) Tobacco Committeemen (Cigar-Leaf): For the employment of Committeemen to assist in con- tacting growers in connection with regular tobacco programs.....	- - -	18,680
(9) Sugar Committeemen (La): For the employment of county and community committeemen to assist in contacting sugar producers with the sugar acreage reduction campaign in the State of Louisiana.....	\$9,058,145	15,180 8,687,419

Agricultural Adjustment Administration appropriation: Project title: objects.	Obligated, 1934.	Estimated obligations, 1935.
<u>Salaries and Expenses, Agricultural Adjustment Administration:</u>		
(10) Extension Service, Administrative: Funds re- imbursed for salaries of Extension employees paid by the Extension Service during the period of service with the A.A.A.....	\$ 6,516	- - -
<u>Administration of Cotton Act of 1934, 1934-1935:</u>		
(11) Cotton Taggers: For the employment of special employees to tag old cotton in con- nection with the Cotton Adjustment Act of 1934, (Bankhead Act).....	- - -	125,000
(12) Cotton Act of 1934, 1934-1935: For the em- ployment of the Field Service personnel re- quired and all extra expense necessary to carry out the provision of the Cotton Ad- justment Act for the crop year, 1934-1935....	- - -	5,203,150
	- - -	5,328,150
<u>Administration of Tobacco Control Act:</u>		
(13) Tobacco Committeemen: For the employment of Committeemen to assist in the adminis- tration of the Kerr-Smith Tobacco Act.....	- - -	38,300
	- - -	38,300
Grand Total.....	9,064,661	14,053,869

Funds Made Available for Drought Work in Cooperation with the
Agricultural Adjustment Administration

Drought Allotment Appropriation: project title; objects	Obligated, 1934	Estimated, 1935
<u>Loans and Relief in Stricken Agricultural Areas (Transfer to Agriculture) 1934 - 1935</u>		
(1) Drought Adjustment Program - Salaries and miscellaneous expenses: Educational phases relating to relief in drought- stricken agricultural areas.....	- - -	\$2,000,000

WORK DONE UNDER AGRICULTURAL ADJUSTMENT ADMINISTRATION AND OTHER EMERGENCY FUNDS

Shortly after the passage of the Agricultural Adjustment Act in May, 1933, the President and the Secretary of Agriculture assigned to the Co-operative Extension Service the task of presenting the adjustment program to farmers, conducting the educational campaigns, explaining the background of production control programs and the provisions of contracts, setting up preliminary county and community committees, training committeemen, assisting the officers of county production control associations in the detailed work of preparing individual farm contracts, and making benefit payments to farmers. In all of the States, in which commodities covered by production control contracts are important, the work of the Agricultural Adjustment Administration has been the major duty of State and county agricultural extension workers. Officials of the Agricultural Adjustment Administration attribute a large measure of the success of the adjustment effort to the untiring devotion of Extension workers to this project. During the past year and a half more than four million individual farm contracts have been executed. Regular Extension appropriations have been supplemented by large allotments of funds by the Agricultural Adjustment Administration for the employment of emergency county agents in counties in which such agents were not regularly employed, for necessary additional State personnel, travel, for the employment of clerical help, and under some contracts, for the employment of community and county committeemen. These allotments, the general purpose for which used is summarized in Table 5, a separate section, have been made to the various States, through State Directors of Extension, in whose hands their administration in the respective States, has been placed. (See table No. 5.)

During the same period the Extension Service has assisted largely in the work of the Farm Credit Administration, acquainting the farmers with the new credit facilities available through that organization for farm loans, commissioner's loans, and for production credit. Extension agents have assisted in the formation and setting up of Production Credit Associations throughout the United States.

Both agricultural and home-demonstration agents have rendered important assistance to State and County Relief Administrations, especially on rural rehabilitation. In many States, Extension Directors and State leaders of home demonstration work are members of State rural rehabilitation committees. Both agricultural and home demonstration agents have assisted the Relief Administration in planning and carrying out food production and food preservation programs for families on relief, both on farms and in smaller towns.

The Extension Service has also carried the major part of the burden on the drouth relief program, including the supervision of the buying of cattle and sheep in drouth areas for the Agricultural Adjustment Administration, and the setting up of county committees to assist farmers in obtaining feed and seed, suggesting emergency forage crops, the use of emergency feeds to supplement those normally used, and in many other ways. (See Table No. 6.)

The Agricultural Adjustment Administration, the Farm Credit Administration, and the Soil Erosion Service have drawn heavily on the Extension Service for the personnel necessary for their National, regional, and State staffs.

It is expected that the Extension Service will continue to render assistance during the next year to the Agricultural Adjustment Administration, the Farm Credit Administration, and Federal and State Emergency Relief Administrations. These emergency activities have, of course, necessarily resulted in heavy curtailment of the normal work of the Extension Service in the agricultural, home-demonstration, and boys' and girls' club fields. Rural people generally are strongly urging Extension leaders to continue and to strengthen the regular Extension program, and are particularly insistent that there shall be no neglect of the important work which the Extension Service is doing with rural boys and girls.

(g) AGRICULTURAL EXHIBITS AT FAIRS

Appropriation, 1932	\$ 129,870
Appropriation, 1933	120,000
Appropriation, 1934	85,000

Appropriation, 1935	69,270 (a)
Budget Estimate, 1936	<u>97,030</u>
Increase, Budget 1936, compared with Appropriation, 1935	<u>27,760 (b)</u>

PROJECT STATEMENT

Projects	1934	1935	1936	Increase or decrease	
		(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
Obligated:					
Preparations.....	\$31,194	\$34,492	\$52,545	\$1,522	\$16,531(2)
Exhibitions.....	33,310	34,778	44,485	1,238	+ 8,469(2)
Total obligations....	64,504	69,270	97,030	2,760(1)	+25,000(2)
Unobligated:					
Salary reduction im- poundments.....	2,424	- - -	- - -	- - -	- - -
Other legislative impoundments	4,910	- - -	- - -	- - -	- - -
Other amounts unobli- gated.....	13,162	- - -	- - -	- - -	- - -
Total appropriation...	85,000	69,270	97,030	+ 27,760	

The increase of \$27,760 for 1936 includes:

(1) An increase of \$2,760 for 5% salary restoration, 1936 (to 100%).

(2) An increase of \$16,531 in the project for "Preparations" and \$8,469 in the project for "Exhibition". This total increase of \$25,000 is to partially restore to the Department its opportunity to place the agricultural programs before the public by means of educational exhibits at fairs. The sum appropriated for this work during the fiscal year 1935 is so radical a curtailment of the average sum made available by Congress for the past five years (about \$120,000) as to make it impossible for the Department to take advantage of the cooperation offered by fairs and expositions in placing its educational material before the public attending such places or to prepare educational exhibits exemplifying new methods and practices in agriculture to accord with current needs. The increase requested will partially restore the capacity of the Department to carry on its normal work of this sort. This is especially important now because many new agencies are becoming interested in displaying exhibits on materials connected with the new agricultural program on wheat, corn, hogs, cotton, tobacco, etc., and from conferences with State agricultural authorities held in the field are coming strong recommendations that the Exhibits function of the Department of Agriculture produce and display new exhibits for use within the States at smaller fairs.

WORK UNDER THIS APPROPRIATION

This appropriation item affords the means by which the Department provides the public with agricultural information in exhibit form which has come to be recognized as one of the important teaching methods. It also enables the Department, through the maintenance of a trained staff, to effectively coordinate the general exhibits work of its bureaus. The ac-

tivity is carried on through a cooperative arrangement with state and interstate fairs within the United States by which the Department furnishes the exhibits and personnel for their management and demonstration, and the fairs pay a share of the cost of transporting exhibits, furnish exhibition space free, pay drayage and labor for unloading and reloading cars at exhibition points, common labor for unpacking, installing, dismantling, and repacking the exhibits, and janitor, watchman, electrical, and such other special services as are necessary to accomplish creditable displays. The appropriation is used for projects as follows:

Preparation: Work under this project consists of the planning and preparing of agricultural exhibits, involving (a) investigations of materials, methods and principles useful in exhibit work; (b) an analysis of exhibit proposals, consultation with subject-matter specialists, determination of form of presentation, and preparation of exhibit designs and building plans; (c) construction and maintenance of exhibits, involving the development of mechanical appliances, electrical devices, art work, modeling and lettering.

Exhibition: Work under this project consists of negotiating financial and cooperative agreements with fairs, Government Departments and Bureaus, railroads, associations, organizations, and other agencies for the movement, installation, display and demonstration of educational exhibits at about seventy-five exhibitions each year, direction and management of such exhibitions and the warehousing, shipment, return and care of a vast number of educational exhibits.

(h) A CENTURY OF PROGRESS

(The Chicago World's Fair Centennial Celebration)
(Transfer to Agriculture)

A transfer of funds of \$39,839 for the fiscal year 1934 and \$16,166 for the fiscal year 1935 was made from the State Department to the Office of Exhibits, Extension Service, under the appropriation 3-03/4549 Chicago World's Fair Centennial Celebration (1933-1934) (Transfer to Agriculture, Act of February 8, 1932).

This appropriation was for the purpose of employing personnel, purchasing materials and the making of contracts necessary in designing, preparing, assembling, transporting, installing, demonstrating, and arranging for the safe-keeping of the Department's exhibits at a Century of Progress Exposition in Chicago, and their return to the custody of the Department and restoration to such condition as will permit their use at subsequent expositions and fairs.

EMERGENCY FUNDS

Direct AllotmentsFunds Made Available by Agricultural Adjustment Administration

	Estimated, obligations, 1935
<u>Salaries and Expenses, Agricultural Adjustment Administration:</u>	
Extension Service, Division of Exhibits: For the employment and necessary expenses of personnel engaged in the field and for the preparation and display of special exhibits to present the A.A.A. program for farm crop and livestock production under the farm management principles advocated by the Administration at State, interstate and other fairs, meetings, etc., during the exhibition season.....	\$10,000

(i) COOPERATIVE FARM FORESTRY

Appropriation, 1932	\$ 74,000
Appropriation, 1933	69,850
Appropriation, 1934	64,787

Appropriation, 1935	54,096 (a)
Budget Estimate, 1936	<u>56,838</u>
Increase, Budget 1936, compared with Appropriation, 1935	<u>2,742 (b)</u>

(a) Includes \$2,742 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$1,192 transferred from Bureau of Animal Industry and (2) \$1,550 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(b) Increase of \$2,742 compared with 1935 appropriation represents 5% salary restoration, 1936 (to 100%).

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Cooperative farm forestry.....	\$43,996	\$54,096	\$56,838	\$2,742 (1)	- - -
<u>Unobligated:</u>					
Salary reduction im- poundment.....	2,433	- - -	- - -	- - -	- - -
Other amounts unob- ligated.....	18,358	- - -	- - -	- - -	- - -
Total appropriation.....	64,787	54,096	56,838	+ 2,742	

(1) The increase of \$2,742 is for 5% salary restoration, 1936 (to 100%).

WORK DONE UNDER THIS APPROPRIATION

This activity is conducted under Section 5 of the Clarke-McNary Act (U.S.C. pp. 427, 428, Secs. 564-570), which authorizes a maximum appropriation of \$100,000. The funds are used for the employment of an extension forester, representing the Forest Service and the Extension Service, and for cooperation with the States in the employment of extension foresters. The usual arrangement is for the Federal Government to contribute \$1,620 toward the salary of the extension forester, the State providing for the remainder of his salary, State travel expense, clerical help, and other necessary expenses. Usually the State contribution is considerably more than that of the Federal Government. At the present this cooperative arrangement is in effect with 32 States, and Puerto Rico. A very large part of the farm acreage of the United States is in wood land and much of the income of farmers in certain sections, particularly in the Northeastern and Southern States, is from forest products. County agents generally are not trained in forest management and need the assistance of farm forestry specialists in strengthening their work in this field. The extension forester arranges demonstrations in woodlot management, selection of trees for cutting, estimating of merchantable timber, and in other fields. In many States, the extension forester is also active in assisting farmers in forest planting plans, and in interesting members of boys' and girls' clubs in tree planting.

(j) COOPERATIVE AGRICULTURAL EXTENSION WORK
(Permanent Annual Smith-Lever Appropriation)

Appropriation, 1932	\$ 4,606,096
Appropriation, 1933	4,656,096
Appropriation, 1934	4,666,096

Appropriation, 1935	4,676,096
Budget Estimate, 1936	<u>4,686,096</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>10,000 (a)</u>

(a) Increase of \$10,000 compared with 1935 appropriation represents an automatic increase for Puerto Rico, pursuant to the Act of March 4, 1931, extending the benefits of the Smith-Lever Act to Puerto Rico.

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
Obligated:					
Payments to States and Territories for Cooperative Agricultural Extension Work.....	\$4,606,096	\$4,676,096	\$4,686,096	- - -	+\$10,000(1)
Unobligated:					
Payment to Puerto Rico (withheld, having failed to comply with the law).....	60,000	- - -	- - -	- - -	- - -
Total appropriation.....	4,666,096	4,676,096	4,686,096	+10,000	

(1) The increase of \$10,000 for 1936 is the annual increment for Puerto Rico, authorized by the Act of March 4, 1931, extending the benefits of the Smith-Lever Act to Puerto Rico.

CHANGE IN LANGUAGE

Subsequent to the preparation of the 1935 Budget, in which provision was made for the reduction of 25 percent in this item in accordance with Section 18 of Executive Order No. 6166, the full amount of the appropriation was restored by the issuance of Executive Order No. 6586, of February 6, 1934, section 18 of the original order being revoked thereby, and the total amount of the appropriation being increased from \$3,507,072 to \$4,676,096, the total available for 1935 under the Smith-Lever Act. The following language is therefore being omitted from this paragraph:

"but pursuant to Executive Order No. 6166 of June 10, 1933, section 18 of which requires that payments for agricultural extension work be reduced 25 percent, this appropriation is reduced \$3,507,072."

WORK DONE UNDER THIS APPROPRIATION

This is the permanent annual appropriation for cooperative extension work, provided in the Smith-Lever Act of May 8, 1914, as amended by the extension of this Act to the Territory of Hawaii by the Act of May 16, 1928, and to Puerto Rico by the Act of March 4, 1931. Under the provisions of these Acts, \$10,000 is appropriated annually to each State, Hawaii, and Puerto Rico without requirement of State or Territorial offset. In addition to the States, Hawaii and Puerto Rico share in the remainder of the annual appropriation in the ratio which the rural population of each bears to the total rural population of the United States, Hawaii and Puerto Rico. This is the basic act under which cooperative extension work is conducted by the Department and the State colleges of agriculture.

EMERGENCY FUNDS - BUREAU TOTAL

Summary

	Obligated, 1934	Estimated, 1935
Agricultural Adjustment Administration Funds:		
Farmers' Cooperative demonstrations.....	\$9,064,661	\$14,053,869
Agricultural exhibits at fairs.....	- - -	10,000
Loans and Relief in Stricken Agricultural Areas (farmers' cooperative demonstrations).	- - -	2,000,000
Total.....	9,064,661	16,063,869

WEATHER BUREAU

(a) GENERAL ADMINISTRATIVE EXPENSES

Appropriation, 1932	\$ 137,630
Appropriation, 1933	136,130
Appropriation, 1934	125,975

Appropriation, 1935	118,793 (a)
Budget Estimate, 1936	<u>124,840</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>6,047 (b)</u>

(a) Includes \$5,936 to cover 5% salary adjustment for 1935 (to 95%) as follows:
 (1) \$2,582 transferred from Bureau of Animal Industry; and (2) \$3,354
 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of \$6,047 compared with 1935 appropriation represents 5% salary
 restoration, 1936 (to 100%).

PROJECT STATEMENT

Projects	1934	1935	1936	Increase or decrease	
		(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
<u>Obligated:</u>					
General Admini- stration	\$104,178	\$118,793	\$124,840	\$6,047(1)	--
<u>Unobligated:</u>					
Salary reduction impoundments	5,416	--	--	--	--
Other legislative impoundments	6,956	--	--	--	--
Other amounts un- obligated	9,425	--	--	--	--
Total Appropriation .	125,975	118,793	124,840	+6,047	

(1) The increase of \$6,047 is for 5% salary restoration, 1936 (to 100%).

WORK DONE UNDER THIS APPROPRIATION

General Administration. General administration of the Bureau is centralized in Washington, D. C., and this appropriation is for the maintenance of fiscal and administrative units, including offices concerned in matters of personnel, accounting, contracts, files, and property.

(b) GENERAL WEATHER SERVICE AND RESEARCH

Appropriation, 1932	\$2,585,200
Appropriation, 1933	2,503,218
Appropriation, 1934	2,279,750

Appropriation, 1935	1,883,260 (a)
Budget Estimate, 1936	<u>2,040,968 (b)</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>157,708</u>

(a) Includes \$76,741 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$33,382 transferred from Bureau of Animal Industry; and (2) \$43,359 from fund authorized by Sec. 21(e) of Act of March, 28, 1934.

(b) Increase of \$157,708 compared with 1935 appropriation consists of -

5% salary restoration, 1936 (to 100%)	\$ + 77,708
Increase in working funds for 1936	+ 80,000
	<u>+157,708</u>

PROJECT STATEMENT

Projects	1934	1935	1936	Increase or decrease	
		(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Meteorological observations and reports .	\$ 595,522	\$ 632,665	\$ 658,890	\$ 26,225	- -
General forecasts and warnings	404,081	428,340	526,125	17,785	(2) +\$80,000
Climatology	459,031	486,715	506,913	20,198	- -
Agricultural meteorology	58,495	62,145	64,710	2,565	- -
River and flood service	157,761	167,605	174,525	6,920	- -
Marine meteorology ...	62,041	65,915	68,630	2,715	- -
Forest fire-weather warning service:					
Service	25,017	28,525	29,405	880	- -
Research	3,598	3,815	3,930	115	- -
Solar radiation	7,090	7,535	7,840	305	- -
Total obligations	1,772,636	1,883,260	2,040,968	(1) 77,708	+80,000
<u>Unobligated:</u>					
Salary reduction impoundments	84,612	- -	- -	- -	- -
Other legislative impoundments	94,614	- -	- -	- -	- -
Other amounts unobligated	327,888	- -	- -	- -	- -
Total appropriation ...	2,279,750	1,883,260	2,040,968	+157,708	

The increase of \$157,708 for 1936 includes:

(1) An increase of \$77,708 for 5% salary restoration, 1936 (to 100%).

(2) An increase of \$80,000 in the project "General Forecasts and Warnings" for reorganization of the hurricane warning service. Reorganization of the hurricane warning service of the Weather Bureau is a vital necessity in the protection of the lives and property of millions of people in our island possessions, on the coastal area from the Carolinas to the Mexican border, and on ships at sea. When a fully developed hurricane threatens a section of the Gulf Coast, millions of dollars worth of property is at stake. Much of it, such as grain and cotton on the tracks and in warehouses, livestock, ships and small craft, and other movable property can be saved by the Bureau's warnings. As organized at present, the service is equivalent to operations during about twelve hours of the day. With earlier warnings a larger proportion of the losses can be averted and correspondingly the lives of inhabitants in the threatened areas can be protected. An average of six tropical storms occur each year (as many as twenty-one have occurred in a single season--1933). Nearly every destructive hurricane causes loss of life. More than 6,000 have been lost in one storm on the Gulf Coast. By organizing the warning service on the coast and rendering a twenty-four-hour service, more complete information and more effective warnings will be possible. This is especially true in the case of storms that approach during night hours.

With the organization as it now exists, all of the forecasts containing advices and warnings are issued from Washington. In the main, the forecasts are predicated on observations taken at island and shore stations and on ships at sea at approximately 8:00 a.m. and 8:00 p.m. and 7:00 a.m. and 7:00 p.m., E.S.T., respectively. A few special observations are obtained between the morning and evening observations, but practically none are obtained between the evening and morning observations, leaving about half the day uncovered by information concerning the location and direction and speed of movement of the storm. Most of the communications between the stations on the coast and Washington are handled by commercial telegraph both in the collection of reports and in the dissemination of advices and warnings. This means of communication is relatively slow and unsatisfactory and time that is vital is lost thereby.

The increase of \$80,000 will provide for the following: (a) Establishment of two forecast centers for hurricane warning service (at Jacksonville and New Orleans); appointment of additional observers to serve in Washington and at eleven of the principal first-order coastal stations; and appointment of additional special substation observers at points in the West Indies; (b) A controlled communication system connecting the two forecast centers with eleven of the principal Weather Bureau first-order stations on the coast by teletype and leased wires; (c) Telegraph, cable, and radio costs for four observations a day, instead of two, from ships, regular West Indian stations, etc.; and (d) Necessary travel and miscellaneous expenses in connection therewith.

WORK DONE UNDER THIS APPROPRIATION

General. This subappropriation provides for the conduct of most of the major service activities of the Weather Bureau essential to the maintenance of nation-wide meteorological activities serving agriculture, commerce, and many other special interests as well as the general public. Basically, the work consists of the collection and dissemination of meteorological data and of the issuance and distribution of weather forecasts, warnings, and advices. The advisory and warning services, including those in connection with occurrence of storms, hurricanes, cold waves, frosts, fire-weather conditions, and floods, are fundamental purposes set forth in the organic act creating the Weather Bureau and are necessarily continuous from day to day and year to year. Any interruption thereto would shortly result in economic losses out of all proportion to the amount of the appropriation. The work includes:

Meteorological observations and reports, including (a) regular observations, instrumental and visual, of the several elements of meteorological conditions, such as barometric pressure, temperature, rainfall, wind direction and velocity, cloudiness, etc., taken regularly at all stations at 8:00 a.m. and p.m. E. S. T., coded and forwarded by telegraph to New York and Chicago by means of a special system, then redistributed to stations as required throughout the country, all in less than forty-five minutes; and (b) special observations, taken at other times and forwarded to designated centers from selected points, when conditions warrant. Meteorological information contained in the messages is disseminated both locally at points of origin and elsewhere as required to meet public needs.

General forecasts and warnings, including (a) district forecasts and warnings of general surface and upper air conditions, frosts, cold waves, storms, and hurricanes, prepared by experienced forecasters (by interpretation of charts of meteorological data secured from observations) and issued from district forecast centers located at Washington, D. C., Chicago, Ill., New Orleans, La., Denver, Colo., and San Francisco, Calif.; and (b) local and specialized forecasts prepared and issued at both district centers and local forecast stations in the field to serve a number of widely different interests such as shippers of perishable goods, concrete construction companies, street cleaning departments, and water power companies.

Climatology, consisting of the tabulations of daily meteorological values; their summation and interpretation by qualified climatologists; and presentation of a complete climatology of the country through the issue of monthly and annual bulletins. The Bureau uses for the purpose its great body of observational data collected by thousands of cooperative observers as well as by its regular field personnel. The record becomes increasingly more valuable with the increase in the number of years maintained.

Agricultural Meteorology, consisting of special weather service to farmers and others during the growing season of the principal crops. Observations are made at some 300 places in the grain and cotton areas and these are collected by telegraph, prepared in bulletin form and released within three hours, and in this manner farmers and all others interested in the growth of crops as affected by weather are advised at frequent intervals of prevailing conditions. A weekly service is also maintained for each State and for the country as a whole whereby bulletins are published giving the general summary of the weather for the week as a whole and its effect on crop growth and farming operations in general.

River and flood service, consisting of the collection and compilation of the data necessary in determining the relation between precipitation and streamflow, the preparation and issuance of river-stage and flood forecasts, and the publication of such information for use of navigators and numerous interests located contiguous to the rivers. River gage readings are made at selected points and reports of precipitation are received from hundreds of rainfall stations situated throughout the important river drainage basins, from which river stage and flood forecasts are made and issued to cover a considerable period in advance.

Marine meteorology, consisting of the collection of observations from ships at sea for the purpose of determining current weather conditions over the oceans, primarily for the safety of life at sea and, secondarily, to secure necessary data to be charted, compiled, and studied in the interest of navigation and meteorology and as the basis of meteorological information published on the pilot charts issued by the Hydrographic Office, Navy Department, in a cooperative arrangement made necessary by the provisions of the Act of Congress approved June 17, 1910, (36 Stat. 508).

Forest fire-weather warning service, consisting of the furnishing of aid in preventing the inception and spread of forest fires. Specialists are now being employed for this work in the heavily-forested areas of the far western states, the upper lake regions, the Appalachian mountains, and New England in making surveys for the determination of topography, elevation, ground covering, etc., as these affect wind direction and force and atmospheric humidity and to establish and equip reporting substations necessary for the furnishing of data on current local meteorological conditions. This preliminary work is followed by intensive localized forecasts and warnings concerning meteorological conditions in their relation to the fire hazard.

Solar radiation investigations, including (a) measurements and study of the intensity of the radiation, or heat energy, received at the surface of the earth directly from the sun and diffusely from the sky; (b) construction and standardization of apparatus for such measurements; and (c) studies of the depletion of solar radiation by the gases, including water vapors and the dust of the atmosphere, and of the expenditure of the radiation that reaches the surface of the earth, including its effect upon air temperature. The investigations are from their nature international in scope and every effort is made to correlate the investigations of the Weather Bureau with those conducted by other agencies not only in the United States but in all parts of the world.

(c) HORTICULTURAL PROTECTION

Appropriation, 1932	\$ 65,500
Appropriation, 1933	59,200
Appropriation, 1934	44,905

Appropriation, 1935	33,169 (a)
Budget Estimate, 1936	<u>34,467</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>1,298 (b)</u>

(a) Includes \$1,312 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$571 transferred from Bureau of Animal Industry; and (2) \$741 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of \$1,298 compared with 1935 appropriation represents 5% salary restoration, 1936 (to 100%).

PROJECT STATEMENT

Projects	1934	1935	1936	Increase or decrease	
		(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
Obligated:					
Fruit-Frost Service.	\$30,454	\$32,669	\$33,967	\$1,298(1)	- -
Fruit-Spray Service.	500	500	500	- -	- -
Total obligations ..	30,954	33,169	34,467	1,298	- -
Unobligated:					
Salary reduction im-					
poundments	1,140	- -	- -	- -	- -
Other amounts un-					
obligated	12,811	- -	- -	- -	- -
Total appropriation .	44,905	33,169	34,467	+1,298(1)	

(1) The increase of \$1,298 is for 5% salary restoration, 1936 (to 100%).

WORK DONE UNDER THIS APPROPRIATION

General. By means of expressly trained personnel, intensive specialized work is conducted in the field under this appropriation for the protection and benefit of horticultural crops. The need for protection to horticulturists is seasonal and the work is therefore recurring and must be continued from year to year. The work includes:

Fruit-frost service, consisting mainly of (a) making temperature surveys to determine the relative susceptibility of the different localities to frosts; and (b) the issuing of forecasts and warnings and experimental work to determine the most effective and economical methods of protection. The work is at present confined principally to the States of Washington, Oregon, California, Texas, Alabama, and Florida. Activities under the project are conducted by specialists in frost protection who are assigned to cooperate with fruit growers for the protection of orchards from frosts and low temperatures. Study is made of the thermal relations of the different localities in each district and definite forecasts are made each day during the danger period of the lowest temperature expected during the ensuing night. The orchardists in the respective districts are notified through a specially arranged system of communication.

Fruit-spray service, consisting of the issuing of special weather forecasts as a guide in the application of sprays to trees. The efficiency of sprays, both as insecticide and fungicide, is largely determined by their application under proper weather conditions. Therefore it is important that the orchardists have correct information as to the weather outlook. The forecasts are made for just as long a period in advance as conditions shown on the weather map will permit. This work is intensively organized and conducted in New York State and to a less degree elsewhere.

(d) AEREOLOGY

Appropriation, 1932	\$1,709,340
Appropriation, 1933	1,465,440
Appropriation, 1934	1,280,605

Appropriation, 1935	1,128,647 (a)
Budget Estimate, 1936	<u>1,213,929</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>85,282 (b)</u>

(a) Includes \$47,588 to cover 5% salary adjustment for 1935 (to 95%) as follows: (1) \$20,701 transferred from Bureau of Animal Industry; and (2) \$26,887 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of \$85,282 compared with 1935 appropriation consists of -

5% salary restoration, 1936 (to 100%)	\$ 45,282
Increase in working funds for 1936	+ 40,000
	<u>+ 85,282</u>

PROJECT STATEMENT

Projects	1934	1935	1936	Increase or decrease	
		(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Aerological Observations and Reports	\$ 52,502	\$ 56,435	\$ 58,700	\$ 2,265	- -
Aviation Forecasts and warnings	13,651	14,672	15,260	588	- -
Commercial Airway Meteorological Service	957,649	1,029,325	1,110,622	41,297	+40,000(2)
Aerological Survey of the United States .	26,252	28,215	29,347	1,132	
Total obligations .	1,050,054	1,128,647	1,213,929	(1) 45,282	40,000
<u>Unobligated:</u>					
Salary reduction impoundments	57,517	- -	- -	- -	- -
Other legislative impoundments	74,373	- -	- -	- -	- -
Other amounts unobligated	98,661	- -	- -	- -	- -
Total appropriation .	1,280,605	1,128,647	1,213,929	+ 85,282	

The increase of \$85,282 for 1936 includes:

(1) An increase of \$45,282 for 5% salary restoration, 1936 (to 100%).

(2) An increase of \$40,000 in the project "Commercial airway service" for meteorological service on new airways. In accordance with the provisions of the Air Commerce Act of 1926, the Secretary of Commerce has designated the following new routes (on which the Post Office Department has inaugurated air mail service) as suitable for air commerce and has requested that the Weather Bureau furnish meteorological service thereon:

Seattle--Spokane	Sioux Falls--Twin Cities	Newark--Atlantic City
Spokane--Billings	Nashville--Washington	Charleston--Atlanta
Cheyenne--Billings	Cincinnati--Washington	El Paso--Albuquerque
Omaha--Bismarck	Newark--Buffalo	

The total mileage involved, in part over mountainous country, is 3,960, requiring the establishment of fifty-two intermediate and off-airway stations. The increase will provide for the payment of salaries of additional commissioned employees required in the field and in Washington and of wages of airway observers at the new field substations; for the purchase of necessary equipment; and for expenses of telegraphing special observations from off-airway stations. If the increase is not provided, the Weather Bureau will be unable to furnish any weather service for the new airways over the communication system provided for in the Department of Commerce estimates, and this will result in subjecting operations thereon to serious hazards to life and property.

WORK DONE UNDER THIS APPROPRIATION

General. As a consequence of the provisions of the Air Commerce Act of 1926, meteorological information and flying weather forecasts are furnished to pilots on all airways designated by the Secretary of Commerce as routes suitable for air commerce. In addition, investigation and study and general weather forecasting of the upper air in the interest of air navigation are conducted under this appropriation. The value of the protection to aviation furnished by this service can not be expressed in monetary terms but the unquestionable safeguard which it provides for the increasing passenger traffic over the airways of this country is alone sufficient to demand a continuation of the appropriation. The work includes:

Aerological observations and reports, involving visual observations and observations made by means of pilot and sounding balloons and by airplanes. The work of this project is basic to all meteorological work connected with the observation and investigation of the upper-air phenomena. Daily airplane flights are made at some twenty stations, located at advantageous points over the country. Self-recording instruments which record data of atmospheric pressure, temperature, humidity, and wind velocity and direction at all heights reached, are carried by the airplanes ascending to heights ranging from 4,100 to 6,500 meters. Pilot balloons six inches in diameter and inflated with hydrogen to twenty-eight inches in diameter are released at numerous stations and observed by means of the theodolite or a modified form of transit. The balloons ascend at a constant known rate and the readings secured by the theodolite observer in azimuth and elevation circles permit of determination of the wind direction and velocity at various heights. Sounding balloons are similar but larger than pilot balloons and carry light instruments. They ascend to heights not otherwise reached, in a few cases exceeding eighteen miles.

Aviation forecasts and warnings, issued at the ten airway centers for air flights within continental United States and Alaska and at the district forecast centers at Washington, D. C., and San Francisco, Calif., for trans-oceanic flights as an aid to Government and general air navigation operations. Simultaneous observations of the upper air are taken and transmitted by telegraph to the forecast centers, where the data is entered by chartmen on eight outline maps of the country representing various heights, including surface and 2,000, 4,000, 6,000, 8,000, 10,000, 12,000, and 14,000 feet. These charts in conjunction with other synoptic weather maps, enable the forecasters to issue what are designated as "Flying Weather Forecasts" for designated routes.

Commercial airway service, involving the furnishing of meteorological service required for safe and efficient flying operations on commercial airways designated as such by the Department of Commerce. To carry out the provisions of the Air Commerce Act of 1926, under which the Weather Bureau is designated as the agency for furnishing meteorological service to commercial airways, there is being established a complete network of stations along and on each side of the designated airways by means of which frequent observations of meteorological conditions both on the surface and in the upper air may be taken and forwarded to certain key stations where the information is tabulated and charted to form the basis of advices and forecasts issued for the aid and protection of the pilots and passengers.

Aerological survey of the United States, involving the preparation of a comprehensive and authoritative summary of upper air conditions in the United States. Necessary data are being assembled, compiled, and summarized. Two parts of the survey have been published and additional parts are in course of preparation in order to keep the work current.

EMERGENCY FUNDS

Direct Allotments.

Projects	Obligated 1934	Estimated Obli- gations, 1935.
<u>Public Works allotments</u> (National Industrial Recovery Act):		
Physical improvements to Weather Bureau buildings, grounds, and storm warning towers	\$ 21,053	\$12,775
Replacing river gages	82,969	67,031
Total, P. W. A. allotments	104,022	79,806
<u>Civil Works Projects:</u>		
Compilation of meteorological data	9,647	- -
Total, direct allotments, as above	113,669	79,806

(a) GENERAL ADMINISTRATIVE EXPENSES

Appropriation, 1932	\$185,575
Appropriation, 1933	184,025
Appropriation, 1934	170,915

Appropriation, 1935	170,545 (a)
Budget Estimate, 1936	<u>178,220</u>
Increase, Budget 1936, compared with Appropriation, 1935	<u>7,675</u>

(a) Includes \$8,360 to cover 5% salary adjustment for 1935 (to 95%); this amount transferred from the appropriation for Eradicating Tuberculosis.

PROJECT STATEMENT

Projects	1934	1935 Estimated	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
<u>Obligated:</u>					
General administration.	\$148,404	\$170,545	\$ 178,220	(1)\$8,360	-\$685(2)
<u>Unobligated:</u>					
Salary reduction im-					
poundments.....	6,214	---	---	---	---
Other legislative					
impoundments.....	2,065	---	---	---	---
Other amounts					
unobligated.....	14,232	---	---	---	---
Total appropriation.....	170,915	170,545	178,220	+ 7,675	

The increase of \$7,675 for 1936 includes:

(1) An increase of \$8,360 for 5% salary restoration, 1936 (to 100%).

(2) A reduction of \$685 by transfer to Interior Department for cleaning service.

WORK DONE UNDER THIS APPROPRIATION

This appropriation is used for payment of overhead charges difficult of allocation to individual divisions, or projects, such as the expense of the chief's office, including accounting, personnel, library, editorial activities, etc.

Appropriation, 1932	\$798,720
Appropriation, 1933	740,030
Appropriation, 1934	689,660

Appropriation, 1935	651,672(a)
Budget Estimate, 1936	<u>681,174</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u><u>29,502</u></u>

(a) Includes \$29,502 to cover 5% salary adjustment for 1935 (to 95%); this amount transferred from the appropriation for Eradicating Tuberculosis.

PROJECT STATEMENT

Projects	1934	1935	1936	Increase or decrease	
		(Estimated)	(Estimated)	5% salary Restoration	Working Funds
<u>Obligated:</u>					
Eradication of scabies in sheep.....	\$ 79,641	\$ 82,180	\$ 86,070	\$ 3,890	- - -
Eradication of scabies in cattle & horses.....	104,289	95,368	99,714	4,346	- - -
Control over interstate shipment of livestock....	231,553	286,840	299,700	12,860	- - -
Enforcement of the 28 hour law.....	30,021	28,515	29,795	1,280	- - -
Investigation of the existence of miscellaneous diseases.....	1,111	5,710	5,965	255	- - -
Quarantine of animals at ports of entry.....	8,055	8,795	9,190	395	- - -
Inspection of animals for import.....	47,295	57,165	59,730	2,565	- - -
Supervision over the importation of animal by-products, forage,.....	70,317	79,404	82,970	3,566	- - -
Inspection and testing of animals for export.....	5,194	7,695	8,040	345	- - -
Total obligations...	577,476	651,672	681,174	(1) 29,502	- - -
<u>Unobligated:</u>					
Salary reduction impoundments.....	24,329	- - -	- - -	- - -	- - -
Other legislative impoundments.....	8,357	- - -	- - -	- - -	- - -
Working funds reduction...	79,498	- - -	- - -	- - -	- - -
Total appropriation.	689,660	651,672	681,174	+ 29,502 (1)	

- (1) The increase of \$29,502 is for 5% salary restoration, 1936 (to 100%).

WORK DONE UNDER THIS APPROPRIATION

Work under this appropriation consists of the eradication of scabies in sheep and cattle, the inspection of southern cattle, the control of the interstate transportation of livestock, the inspection of vessels, the enforcement of the 28-hour law, the inspection and quarantine of imported animals, including the establishment and maintenance of quarantine stations, the supervision over the sanitary handling of hides, skins, wool and other animal by-products, feeding materials, and fertilizers offered for importation, the investigational and inspection activities relative to the existence of contagious diseases, and the inspection and mallein testing of animals. All these measures for the safeguarding of this country's livestock are regarded as essential to ward off calamitous results.

(c) ERADICATING TUBERCULOSIS

Appropriation, 1932	\$6,505,800	
Appropriation, 1933	6,061,777	
Appropriation, 1934	5,945,360	

Appropriation, 1935	4,088,227	(a)
Budget Estimate, 1936	<u>2,631,616</u>	
Decrease, Budget 1936, compared with		
Appropriation, 1935	<u>1,456,611</u>	(b)

- (a) Includes \$46,048 for 5% salary adjustment for 1935 (to 95%) under appropriation for operating expenses.
- (b) Decrease of \$1,456,611 compared with 1935 appropriation consists of:
- | | |
|---|-------------------|
| Increase to cover 5% salary restoration, 1936 (to 100%)... | +\$46,048 |
| Reduction offsetting transfers to other bureaus and appropriations in 1935..... | -1,016,629 |
| Decrease by transfer to Interior Department for cleaning service..... | - 1,159 |
| Administrative reduction (savings)..... | - 483,371 |
| Reduction - Continuation of 1935 impoundment..... | - 1,500 |
| | <u>-1,456,611</u> |

ADDITIONAL FUNDS AVAILABLE FOR TUBERCULOSIS ERADICATION

In addition to the regular appropriation, an allotment of \$12,000,000 has been made for tuberculosis eradication under the provisions of the Jones-Connally Act, approved April 7, 1934 (Public No. 142-73rd Congress). Of this amount \$9,000,000 is estimated for obligations in the fiscal year 1935 and \$3,000,000 in the fiscal year 1936.

This work is carried on in cooperation with the livestock sanitary authorities of the various States. With these additional funds it is possible to considerably increase the volume of the work with the prospect of completion at a much earlier date.

The estimate of \$9,000,000, for the fiscal year 1935 is allotted to various States and territories as follows:.

<u>State or Territory</u>	<u>Allotment</u>	<u>State or Territory</u>	<u>Allotment</u>
Alabama.....	\$20,000	Nebraska.....	\$87,000
Arizona.....	73,000	Nevada.....	10,000
Arkansas.....	115,000	New Mexico.....	50,000
California.....	1,600,000	New York.....	4,000,000
Colorado.....	140,000	North Dakota.....	10,000
Connecticut.....	110,000	Ohio.....	140,000
Delaware.....	2,000	Oklahoma.....	225,000
District of Columbia	28,000	Oregon.....	10,000
Florida.....	15,000	Pennsylvania.....	100,000
Georgia.....	75,000	South Carolina.....	15,000
Indiana.....	25,000	South Dakota.....	120,000
Iowa.....	500,000	Tennessee.....	80,000
Kansas.....	125,000	Texas.....	300,000
Louisiana.....	20,000	Vermont.....	100,000
Maryland.....	6,000	Virginia.....	30,000
Massachusetts.....	15,000	Washington.....	20,000
Minnesota	200,000	West Virginia.....	10,000
Mississippi.....	85,000	Wisconsin.....	100,000
Missouri.....	260,000	Wyoming.....	79,000
Montana.....	80,000	Porto Rico.....	20,000
		9,000,000 (c)	

(c) Estimated obligations for operating expenses are \$1,800,000; for indemnities, \$7,200,000.

[illegible]

PROJECT STATEMENT
(Regular Funds)

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease 5% Salary: Working Restoration Funds	
<u>Obligated:</u>					
Tuberculin testing at public stockyards....	54,466	67,055	70,620	\$3,565	- - -
Eradicating tuberculosis from herds of cattle and from circumscribed areas.....	922,434	992,937	1,033,371	41,593	- \$1,159(2)
Indemnities for animals slaughtered on account of tuberculosis	2,900,393	1,500,000	1,500,000	- - -	- - -
Investigations of animal tuberculosis.....	23,621	26,735	27,625	890	- - -
Total obligations...	3,900,814	2,586,727	2,631,616	(1) 46,048	- 1,159
<u>Unobligated:</u>					
Salary reduction impoundment.....	36,762	- - -	- - -	- - -	- - -
Other legislative impoundments.....	15,240	1,500	- - -	- - -	- 1,500(3)
Working funds unobligated.....	1,992,544	483,371	- - -	- - -	-483,371(4)
Transfer to other appropriations.....	- - -	1,016,629	- - -	- - -	-1,016,629(4)
Total Appropriation.	5,945,360	4,088,227	2,631,616	- 1,456,611	

The decrease of \$1,456,611 for 1936 includes:

(1) An increase of \$46,048 for 5% salary restoration, 1936 (to 100%).

(2) A reduction of \$1,159 by transfer to Interior Department for cleaning service.

(3) A reduction of \$1,500 continuing 1935 impoundment.

(4) A decrease of \$1,500,000 in appropriation for indemnities, offsetting amounts transferred or reserved in 1935 as follows: (a) \$1,016,629 transferred to other appropriations and (b) an unapportioned reserve of \$483,371.

WORK DONE UNDER THIS APPROPRIATION

The object of this work is to assist in a campaign to control and eradicate tuberculosis among livestock under a uniform plan in cooperation with the States. This campaign was launched as a Federal aid project after an extensive survey showed the disease was spreading. The States and livestock owners have looked to the Federal Government for leadership

in this work since its inauguration, and desire that this assistance be continued, as many failures occurred when independent efforts were employed. Approximately \$14,000,000 was appropriated last year by various States to assist in this campaign. The appropriation has been divided to provide for operating expenses for supervision and indemnity for animals slaughtered.

(d) ERADICATING CATTLE TICKS

Appropriation, 1932	\$ 771,900
Appropriation, 1933	724,400
Appropriation, 1934	671,089
<hr/>	
Appropriation, 1935	588,481 (a)
Budget Estimate, 1936	<u>613,940</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>25,459</u>

(a) Includes \$26,474 to cover 5% salary adjustment for 1935 (to 95%); this amount transferred from appropriation for Eradicating Tuberculosis.

PROJECT STATEMENT

Projects	1934	1935	1936	Increase or Decrease	
		(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Eradicating cattle ticks.....	\$ 599,791	\$ 587,481	\$ 613,940	(1) \$26,459	- - -
<u>Unobligated:</u>					
Salary reduction impoundments.....	28,968	- - -	- - -	- - -	- - -
Other Legislative impoundments.....	2,776	1,000	- - -	- - -	-\$1,000 (2)
Working funds unobligated.....	39,554	- - -	- - -	- - -	- - -
Total appropriation:	671,089	588,481	613,940	+ 25,459	

The increase of \$25,459 for 1936 includes:

- (1) An increase of \$26,459, for 5% salary restoration, 1936 (to 100%).
- (2) Reduction of \$1,000, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

This appropriation is used cooperatively for the payment of salaries and travel, and office expenses, of veterinarians and agents in Alabama, Arkansas, Florida, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Texas, and Virginia, in the eradication of the southern cattle tick, which spreads splenetic fever infection among cattle. As counties are cleaned they are released from Federal quarantine, and their surplus livestock may then be shipped to markets without restrictions.

The States generally are contributing larger sums to this work than the appropriation provided by the Federal Government. The work is done under State laws and regulations, Federal money being expended for supervision, thus insuring that all measures of eradication be so carried out as to warrant the release of cleaned areas from quarantine.

(e) INVESTIGATIONS IN ANIMAL HUSBANDRY

Appropriation, 1932	\$ 723,400
Appropriation, 1933	674,600
Appropriation, 1934	637,150

Appropriation, 1935	616,669 (a)
Budget Estimate, 1936	<u>757,663</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>140,994 (b)</u>

(a) Includes \$23,994 to cover 5% salary restoration for 1935 (to 95%); this amount transferred from appropriation for Eradicating Tuberculosis.

(b) Increase of \$140,994 compared with 1935 appropriation consists of:

5% salary restoration 1936 (to 100%).....	+ \$23,994
Increase in working funds for 1936	+ 118,000
Reduction: Offsetting 1935 impoundment.....	+ <u>1,000</u>
	<u>+ 140,994</u>

1. The first part of the paper is devoted to a general discussion of the problem of the existence of solutions of the system of equations

$$\frac{dx}{dt} = f(x, y, z), \quad \frac{dy}{dt} = g(x, y, z), \quad \frac{dz}{dt} = h(x, y, z),$$

where f, g, h are continuous functions of x, y, z and satisfy the conditions

$$f(0, 0, 0) = 0, \quad g(0, 0, 0) = 0, \quad h(0, 0, 0) = 0.$$

It is shown that if the functions f, g, h satisfy the conditions

$$f(x, y, z) = O(\rho), \quad g(x, y, z) = O(\rho), \quad h(x, y, z) = O(\rho),$$

where $\rho = \sqrt{x^2 + y^2 + z^2}$, then the system of equations has a solution of the form

$$x = \alpha t, \quad y = \beta t, \quad z = \gamma t,$$

where α, β, γ are constants.

It is also shown that if the functions f, g, h satisfy the conditions

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Swine investigations.	\$45,242	\$ 50,900	\$ 77,856	\$ 1,956	+\$25,000(2)
Sheep and goat investigations.....	84,692	95,887	97,000	1,113	- - -
Horse and mule investigations.....	24,985	28,288	29,376	1,088	- - -
Genetic research.....	13,555	19,390	20,136	746	- - -
Beltsville Farm.....	41,448	36,811	39,227	1,416	+ 1,000(3)
Beef and dual-purpose cattle investigations	154,310	146,558	177,945	6,387	+25,000(4)
Certification of pedigrees.....	3,528	5,652	5,849	197	- - -
Poultry investigations	147,115	156,180	231,180	8,000	+67,000(5)
Nutrition research...	29,724	32,281	33,522	1,241	- - -
Meat investigations...	28,995	31,847	33,072	1,225	- - -
Livestock production, Big Spring Texas....	10,970	11,875	12,500	625	- - -
Total obligations...	584,564	615,669	757,663	(1)23,994	+118,000
<u>Unobligated:</u>					
Salary reduction impoundments.....	22,748	- - -	- - -	- - -	- - -
Other legislative impoundments.....	28,404	1,000	- - -	- - -	- 1,000(6)
Working funds unobligated.....	1,434	- - -	- - -	- - -	- - -
Total appropriation	637,150	616,669	757,663	+ 140,994	

The increase of \$140,994 for 1936 includes:

(1) An increase of \$23,994 for 5% salary restoration, 1936 (to 100%).

(2) An increase of \$25,000 under the project for "Swine Investigations". This increase is necessary to provide for investigations relating to the pork-producing qualities of the Danish Landrace hogs, which are noted for their prolificacy, efficient food consumption, and the quality of their meat, with representatives of American breeds, in an endeavor to supply the American farmer with a strain or breed of hog that will produce, more efficiently, a quality of pork better suited to both the domestic and the export trade. Years of careful selection and testing by the Danish breeders and the Danish government have produced a Landrace breed, that in 1933, averaged 3.2 more pigs weaned per litter than the average shown in a thorough study of American sows. The quality of pork from the Landrace hogs has won a virtual monopoly on the British market.

The Department has imported a selected herd of Landrace breeding stock which is now at Beltsville, Maryland, but funds are needed to furnish essential houses, fences, and other equipment, feed, labor and laboratory services and supplies to use these Landrace hogs in this important breeding investigation.

(3) An increase of \$1,000 in the project "Beltsville Farm". offsetting 1935 impoundments to help in meeting maintenance costs on account of greatly expanded facilities at the farm.

(4) An increase of \$25,000 in the project "Beef Cattle Investigations." This increase is necessary to carry forward record-of-performance testing with Red Danish cattle, which are of world-wide note for their efficient feed consumption in the production of milk and beef, to develop strains more efficient in beef and milk production for this country. While records of 8,000 pounds of milk and acceptable fleshing characteristics are not uncommon in a number of Shorthorn, Devon, and Red Polled herds in the United States, the average milk production of these, 3,654,302 cows milked in the United States in 1929 was 4,043 pounds. Nineteen thirty-one figures on 145,000 Red Danish dual-purpose cattle show an average production of 7,674 pounds of milk. It is proposed to secure some of the most promising cattle of the Red Danish dual-purpose breed obtainable in Denmark and utilize these to develop cattle strains with which to develop cattle adapted to conditions in the United States. Those shown to possess superior germ plasm will be utilized to develop these improved strains. Profitable production of beef and milk can be assured through the dissemination and use of the improved cattle. The amount requested will be used to purchase these cattle abroad, pay transportation costs to the United States, feed and maintain and to provide for the necessary travel, personnel, supplies, and material for the studies during 1936.

(5) An increase of \$67,000 in the project "Poultry Investigations", consisting of:

(a) An increase of \$27,000 for poultry record-of-performance testing. The average egg production of the hens on over five million farms and in commercial flocks is reported by the Census to be about 80 per bird. This low average egg production obtained is due largely to poor breeding, with the result that hundreds of thousands of farmers make practically no profits over feed costs, which are comparatively high. In order to make a reasonable labor income for the average farmer he must have a better bred flock that averages at least 150 eggs per bird. The record-of-performance project is designed to determine the manner in which superior germ plasm is inherited so that farmers and poultry breeders will be better advised how to develop efficient laying strains. An average egg production of 150 eggs per bird would more than double the farmers annual income from eggs because the feed maintenance requirement of the average hen is about 70 pounds whether she lays 80 or 150 eggs. The average size of egg marketed also would be increased because the record of performance project should show the farmers how to increase egg size in their

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper bookkeeping is essential for the success of any business and that it should be done on a regular basis. The text also mentions that records should be kept for a sufficient period of time to allow for future reference.

2. The second part of the document describes the various methods that can be used to collect and analyze data. It includes a discussion of the different types of data that can be collected, such as primary and secondary data, and the various techniques that can be used to analyze this data. The text also mentions that the results of the analysis should be presented in a clear and concise manner.

3. The third part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper bookkeeping is essential for the success of any business and that it should be done on a regular basis. The text also mentions that records should be kept for a sufficient period of time to allow for future reference.

4. The fourth part of the document describes the various methods that can be used to collect and analyze data. It includes a discussion of the different types of data that can be collected, such as primary and secondary data, and the various techniques that can be used to analyze this data. The text also mentions that the results of the analysis should be presented in a clear and concise manner.

5. The fifth part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper bookkeeping is essential for the success of any business and that it should be done on a regular basis. The text also mentions that records should be kept for a sufficient period of time to allow for future reference.

6. The sixth part of the document describes the various methods that can be used to collect and analyze data. It includes a discussion of the different types of data that can be collected, such as primary and secondary data, and the various techniques that can be used to analyze this data. The text also mentions that the results of the analysis should be presented in a clear and concise manner.

7. The seventh part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper bookkeeping is essential for the success of any business and that it should be done on a regular basis. The text also mentions that records should be kept for a sufficient period of time to allow for future reference.

8. The eighth part of the document describes the various methods that can be used to collect and analyze data. It includes a discussion of the different types of data that can be collected, such as primary and secondary data, and the various techniques that can be used to analyze this data. The text also mentions that the results of the analysis should be presented in a clear and concise manner.

9. The ninth part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper bookkeeping is essential for the success of any business and that it should be done on a regular basis. The text also mentions that records should be kept for a sufficient period of time to allow for future reference.

10. The tenth part of the document describes the various methods that can be used to collect and analyze data. It includes a discussion of the different types of data that can be collected, such as primary and secondary data, and the various techniques that can be used to analyze this data. The text also mentions that the results of the analysis should be presented in a clear and concise manner.

flocks. It is proposed to test progeny from the best existing strains of laying stock to determine their true capacity for reproduction as measured by the hatchability of their eggs, the growth of their chicks, and the livability and egg production of their pullets. These investigations also will help eliminate much of the annual loss through eggs that fail to hatch, and from laying pullet mortality.

(b) An increase of \$40,000 for administration, in cooperation with State authorities, of regulations for the improvement of poultry, poultry products, and hatcheries:

National and State poultry leaders have made emphatic requests that the Department cooperate with the States in putting into effect on a national basis a proposed uniform poultry improvement plan which has been submitted to the Department by the poultry industry.

The poultry improvement work carried on in the States provides for the official recognition of three grades of breeding flocks, hatching eggs, baby chicks, and hatcheries, all of which are governed by State regulations. In addition, provision is made for the eradication of pullorum disease from the breeding flocks supplying eggs to hatcheries. Products that are produced under these official State regulations are of superior quality and the buying public is given protection against misrepresentation. The Department of Agriculture proposes to appoint coordinators whose duty it will be to see that the various poultry breeders, hatchery flocks owners, and hatcheries comply with the regulations on a national basis. Under this plan the coordinators will supervise the improvement work done in the States and will cooperate with State officials in the administration of the project.

This plan has the support of the International Baby Chick Association, the Poultry Science Association, the National Poultry Council, the Northeastern Poultry Producers' Council, the Institute of American Poultry Industries, and numerous State organizations. The plan is of direct interest to over 5,000,000 farmers who raise poultry, to over 12,000 hatchery operators who hatch over 700,000,000 chicks annually, and to millions of consumers because the plan will tend to improve poultry products marketed. Of the billion chicks hatched in the United States each year, about 70 per cent come from commercial and breeder hatcheries. It is through the 12,000 hatcheries, therefore, that there can be effected most of the improvement in the quality of farm flocks. Uniform State rules and regulations governing the breeding flocks and the hatcheries would do much to improve conditions in the industry. The disease eradication stage of the plan alone should do much toward reducing the estimated annual loss of \$18,000,000 from chicks that die. State authorities insist that the only way that uniform State rules and regulations can be brought about is through Federal cooperation.

After struggling among themselves for over ten years to arrive at uniformity, State authorities and poultry leaders now insist emphatically that the Department cooperate with the States in putting

proposed national plan into effect. They desire Federal supervision of the various rules and regulations. Several States have changed their rules and regulations this year to conform to the national plan in anticipation of Federal cooperation next year.

(6) Reduction of \$1,000 offsetting 1935 impoundment.

CHANGE IN LANGUAGE

The following new language has been added to the proviso for experiments in poultry feeding and breeding:

"Of which amount \$40,000 may be used in cooperation with State authorities in the Administration of regulations for the improvement of poultry, poultry products, and hatcheries."

WORK DONE UNDER THIS APPROPRIATION

The animal husbandry investigations of the Bureau of Animal Industry deal with the collection and dissemination of information on livestock problems of regional and national importance having to do with the breeding, feeding, and management of domestic farm animals, including poultry. Results are measured in terms of quantity and quality of the animals and their products, such as meat, eggs, wool, mohair, etc. These experiments often are conducted in cooperation with other bureaus and divisions of the Department, with one or a group of State agricultural experiment stations, with farmers and other agencies.

(f) INVESTIGATIONS OF DISEASES OF ANIMALS

Appropriation, 1932	\$460,000
Appropriation, 1933	422,950
Appropriation, 1934	375,000

Appropriation, 1935	351,852 (a)
Budget Estimate, 1936	<u>366,755</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>14,903</u>

- (a) Includes \$14,903 to cover 5% salary adjustment for 1935 (to 95%), this amount transferred from appropriation Tuberculosis Eradication.

1. The first part of the paper is devoted to a general discussion of the problem of the existence of solutions of the system of equations (1) and (2) for arbitrary values of the parameters α and β . It is shown that the system has solutions for all values of the parameters α and β if the conditions (3) and (4) are satisfied.

2. THE CASE OF SMALL VALUES OF THE PARAMETERS α AND β

In the case of small values of the parameters α and β , the system of equations (1) and (2) can be solved by the method of perturbation theory. Let us assume that the solution of the system can be written in the form of a power series in the parameters α and β :

$$\begin{aligned}
 x &= x_0 + \alpha x_1 + \beta x_2 + \dots \\
 y &= y_0 + \alpha y_1 + \beta y_2 + \dots
 \end{aligned}$$

where x_0 and y_0 are the solutions of the system for $\alpha = \beta = 0$. Substituting these expressions into the system of equations (1) and (2) and equating the coefficients of like powers of α and β to zero, we obtain a sequence of linear equations for the coefficients $x_1, x_2, y_1, y_2, \dots$.

The first equation in this sequence is the equation for x_1 and y_1 . It can be written in the form

$$\begin{aligned}
 \dot{x}_1 &= -x_0 \\
 \dot{y}_1 &= -y_0
 \end{aligned}$$

where the dot denotes differentiation with respect to time. The solution of this system is

$$\begin{aligned}
 x_1 &= -x_0 t \\
 y_1 &= -y_0 t
 \end{aligned}$$

The next equation in the sequence is the equation for x_2 and y_2 . It can be written in the form

$$\begin{aligned}
 \dot{x}_2 &= -x_1 \\
 \dot{y}_2 &= -y_1
 \end{aligned}$$

where the dot denotes differentiation with respect to time. The solution of this system is

$$\begin{aligned}
 x_2 &= \frac{1}{2} x_0 t^2 \\
 y_2 &= \frac{1}{2} y_0 t^2
 \end{aligned}$$

The next equation in the sequence is the equation for x_3 and y_3 . It can be written in the form

$$\begin{aligned}
 \dot{x}_3 &= -x_2 \\
 \dot{y}_3 &= -y_2
 \end{aligned}$$

where the dot denotes differentiation with respect to time. The solution of this system is

$$\begin{aligned}
 x_3 &= -\frac{1}{6} x_0 t^3 \\
 y_3 &= -\frac{1}{6} y_0 t^3
 \end{aligned}$$

The next equation in the sequence is the equation for x_4 and y_4 . It can be written in the form

$$\begin{aligned}
 \dot{x}_4 &= -x_3 \\
 \dot{y}_4 &= -y_3
 \end{aligned}$$

where the dot denotes differentiation with respect to time. The solution of this system is

$$\begin{aligned}
 x_4 &= \frac{1}{24} x_0 t^4 \\
 y_4 &= \frac{1}{24} y_0 t^4
 \end{aligned}$$

The next equation in the sequence is the equation for x_5 and y_5 . It can be written in the form

$$\begin{aligned}
 \dot{x}_5 &= -x_4 \\
 \dot{y}_5 &= -y_4
 \end{aligned}$$

where the dot denotes differentiation with respect to time. The solution of this system is

$$\begin{aligned}
 x_5 &= -\frac{1}{120} x_0 t^5 \\
 y_5 &= -\frac{1}{120} y_0 t^5
 \end{aligned}$$

The next equation in the sequence is the equation for x_6 and y_6 . It can be written in the form

$$\begin{aligned}
 \dot{x}_6 &= -x_5 \\
 \dot{y}_6 &= -y_5
 \end{aligned}$$

where the dot denotes differentiation with respect to time. The solution of this system is

$$\begin{aligned}
 x_6 &= \frac{1}{720} x_0 t^6 \\
 y_6 &= \frac{1}{720} y_0 t^6
 \end{aligned}$$

The next equation in the sequence is the equation for x_7 and y_7 . It can be written in the form

$$\begin{aligned}
 \dot{x}_7 &= -x_6 \\
 \dot{y}_7 &= -y_6
 \end{aligned}$$

where the dot denotes differentiation with respect to time. The solution of this system is

$$\begin{aligned}
 x_7 &= -\frac{1}{5040} x_0 t^7 \\
 y_7 &= -\frac{1}{5040} y_0 t^7
 \end{aligned}$$

The next equation in the sequence is the equation for x_8 and y_8 . It can be written in the form

$$\begin{aligned}
 \dot{x}_8 &= -x_7 \\
 \dot{y}_8 &= -y_7
 \end{aligned}$$

where the dot denotes differentiation with respect to time. The solution of this system is

$$\begin{aligned}
 x_8 &= \frac{1}{40320} x_0 t^8 \\
 y_8 &= \frac{1}{40320} y_0 t^8
 \end{aligned}$$

The next equation in the sequence is the equation for x_9 and y_9 . It can be written in the form

$$\begin{aligned}
 \dot{x}_9 &= -x_8 \\
 \dot{y}_9 &= -y_8
 \end{aligned}$$

where the dot denotes differentiation with respect to time. The solution of this system is

$$\begin{aligned}
 x_9 &= -\frac{1}{362880} x_0 t^9 \\
 y_9 &= -\frac{1}{362880} y_0 t^9
 \end{aligned}$$

The next equation in the sequence is the equation for x_{10} and y_{10} . It can be written in the form

$$\begin{aligned}
 \dot{x}_{10} &= -x_9 \\
 \dot{y}_{10} &= -y_9
 \end{aligned}$$

where the dot denotes differentiation with respect to time. The solution of this system is

$$\begin{aligned}
 x_{10} &= \frac{1}{3628800} x_0 t^{10} \\
 y_{10} &= \frac{1}{3628800} y_0 t^{10}
 \end{aligned}$$

The next equation in the sequence is the equation for x_{11} and y_{11} . It can be written in the form

$$\begin{aligned}
 \dot{x}_{11} &= -x_{10} \\
 \dot{y}_{11} &= -y_{10}
 \end{aligned}$$

where the dot denotes differentiation with respect to time. The solution of this system is

$$\begin{aligned}
 x_{11} &= -\frac{1}{42336000} x_0 t^{11} \\
 y_{11} &= -\frac{1}{42336000} y_0 t^{11}
 \end{aligned}$$

The next equation in the sequence is the equation for x_{12} and y_{12} . It can be written in the form

$$\begin{aligned}
 \dot{x}_{12} &= -x_{11} \\
 \dot{y}_{12} &= -y_{11}
 \end{aligned}$$

where the dot denotes differentiation with respect to time. The solution of this system is

$$\begin{aligned}
 x_{12} &= \frac{1}{508032000} x_0 t^{12} \\
 y_{12} &= \frac{1}{508032000} y_0 t^{12}
 \end{aligned}$$

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease 5% Salary Restoration	decrease Working Funds
<u>Obligated:</u>					
Pathological investigations of diseases of livestock.....	\$55,449	\$56,877	\$ 58,407	\$ 1,530	- - -
Pathological investigations of diseases of poultry.....	21,257	22,395	22,995	600	--- -
Pathological investigations of stock poisoning by plants..	18,620	19,121	19,637	516	- - -
Biological investigation of diseases of animals.....	9,140	10,572	10,857	285	- - -
Index catalog and collection of parasites.	6,644	7,460	7,855	395	- - -
Investigation of poultry parasites....	15,963	15,715	16,545	830	- - -
Investigation of swine parasites.....	15,786	18,875	19,865	990	- - -
Investigation of ruminant parasites.....	91,026	88,795	93,415	4,620	-- - -
Investigation of horse parasites.....	2,671	8,780	9,242	462	- - -
Investigation of miscellaneous parasites.	11,850	14,180	14,827	747	- - -
Investigation of treatment of livestock for internal and external parasites.....	8,535	8,992	9,467	475	- - -
Breeding and feeding small animals for disease research.....	9,192	8,610	9,063	453	- - -
Investigation and control of contagious abortion of animals..	66,126	71,480	74,480	3,000	- - -
Total obligations	\$332,259	351,852	366,755	(1) 14,903	- - -
<u>Unobligated:</u>					
Salary reduction impoundments.....	13,242	- - -	- - -	- - -	- - -
Other legislative impoundments.....	3,044	- - -	- - -	- - -	- - -
Working funds obligated.....	26,455	- - -	- - -	- - -	- - -
Total appropriation	375,000	351,852	366,755	+ 14,903 (1)	

(1) The increase of \$14,903 is for 5% salary restoration, 1936 (to 100%).

WORK DONE UNDER THIS APPROPRIATION

The basic research and experimental work in animal diseases and parasites is conducted under this appropriation. It is essential to know the

cause of disease and mode of dissemination, the life histories of parasites and their resistance to atmospheric conditions and chemicals before any effectual control or eradication methods may be devised and applied to either disease or parasites. This essential knowledge is gained only through research and experimentation.

In addition to the regular appropriation, an allotment of \$18,000,-000 has been made from funds provided by the Jones-Connally Act and estimated to be obligated as follows:

	<u>1935</u>	<u>1936</u>
Combating Bangs disease in cattle	\$11,000,000	\$6,000,000
Combating Mastitis in Cattle.....	1,000,000	- - -

(1) While the project, "Combating Bangs Disease" is voluntary as far as the cattle owner is concerned the demand for service, including inspection and indemnity payments, is in many States very great, indicating the popularity of the work. Of the \$17,000,000 for this work, \$16,655,000 has been allotted to various States and territories as follows:

<u>State or Territory</u>	<u>Amount</u>	<u>State or Territory</u>	<u>Amount</u>
Alabama	\$ 200,000	Nevada	\$ 30,000
Arizona	50,000	New Hampshire	100,000
Arkansas	200,000	New Jersey.....	100,000
California.....	100,000	New Mexico	40,000
Colorado.....	100,000	New York	200,000
Connecticut	100,000	North Carolina	150,000
Delaware	75,000	North Dakota	100,000
District of Columbia....	20,000	Ohio	1,100,000
Florida.....	100,000	Oklahoma.....	650,000
Georgia	100,000	Oregon	325,000
Idaho	175,000	Pennsylvania.....	1,000,000
Illinois.....	700,000	Rhode Island	10,000
Indiana	700,000	South Carolina.....	80,000
Iowa	750,000	South Dakota	100,000
Kansas.....	250,000	Tennessee	300,000
Kentucky.....	300,000	Texas.....	600,000
Louisiana.....	75,000	Utah	100,000
Maine	100,000	Vermont.....	100,000
Maryland.....	200,000	Virginia.....	450,000
Massachusetts.....	80,000	Washington	325,000
Michigan	500,000	West Virginia	150,000
Minnesota	1,900,000	Wisconsin	2,700,000
Mississippi.....	200,000	Wyoming.....	40,000
Missouri.....	400,000	Hawaii	30,000
Montana.....	200,000	Alaska	5,000
Nebraska.....	300,000	Puerto Rico.....	5,000

Total.....\$16,655,000

Of this total it is estimated that there will be obligated for--

Operating Expenses. \$3,216,364

Indemnities..... 13,438,636

A reserve of 8,345,000 is available for further allotment when and where found necessary.

(2) The project "Combating Mastitis" is conducted largely in conjunction with the Bangs' disease project. In the area comprising the New York milk shed where farmers are required to have their dairy

herds inspected for Mastitis, the demand for this service is greater than elsewhere. This work is just being started and allotments to the various States for the purpose are as follows:

<u>State or Territory</u>	<u>Amount</u>	<u>State or Territory</u>	<u>Amount</u>
Alabama	\$ 3,000	Nevada.....	\$ 2,000
Arizona	3,000	New Hampshire.....	10,000
Arkansas	3,000	New Jersey.....	20,000
California.....	13,000	New Mexico.....	3,000
Colorado.....	3,000	New York.....	230,000
Connecticut.....	15,000	North Carolina.....	3,000
Delaware.....	5,000	North Dakota.....	5,000
District of Columbia..	2,160	Ohio	25,000
Florida	3,000	Oklahoma	10,000
Georgia	3,000	Oregon.....	15,000
Idaho	5,000	Pennsylvania.....	40,000
Illinois.....	22,840	Rhode Island.....	10,000
Indiana.....	20,000	South Carolina	3,000
Iowa.....	25,000	South Dakota	5,000
Kansas.....	10,000	Tennessee.....	10,000
Kentucky.....	10,000	Texas.....	13,000
Louisiana.....	10,000	Utah	5,000
Maine.....	5,000	Vermont.....	40,000
Maryland.....	15,000	Virginia.....	15,000
Massachusetts	20,000	Washington.....	5,000
Michigan.....	20,000	West Virginia.....	5,000
Minnesota.....	30,000	Wisconsin.....	40,000
Mississippi.....	3,000	Wyoming	3,000
Missouri.....	15,000	Hawaii	1,000
Montana.....	3,000	Porto Rico.....	1,000
Nebraska.....	10,000		
	Total.....		\$ 800,000

Of this amount it is estimated there will be obligated \$160,000 for operating expenses and \$640,000 for indemnities for animals condemned and slaughtered on account of mastitis.

A reserve of \$200,000 is available for further allotment when and where found necessary.

The plan for payment of indemnities for cattle slaughtered under all emergency funds is limited to not to exceed \$20 per animal.

(g) INVESTIGATION, ERADICATION, AND CONTROL OF HOG CHOLERA

Appropriation, 1932.	\$499,480
Appropriation, 1933.	466,380
Appropriation, 1934.	420,000

Appropriation, 1935.	357,107 (a)
Budget Estimate, 1936.	<u>373,424</u>
Increase, Budget 1936, compared with	
Appropriation, 1935.	<u>16,317</u>

(a) Includes \$16,317 to cover 5% salary adjustment for 1935 (to 95%); this amount transferred from the appropriation for Eradicating Tuberculosis.

PROJECT STATEMENT

Projects	1934	1935	1936	Increase or decrease	
		(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Hog cholera control looking to eradication	\$117,280	\$121,961	\$127,191	\$5,230	---
Investigation of methods of producing immunization against cholera in hogs.....	20,486	21,683	22,510	827	---
Investigation of modes of dissemination of hog cholera.....	4,117	4,837	5,010	173	---
Control of manufacture, importation and ship- ment of viruses se- rums, toxins, etc...	207,865	208,351	218,713	10,362	---
Total obligations....	349,748	356,832	373,424	(1) 16,592	---
<u>Unobligated:</u>					
Salary reduction im- poundment.....	15,231	---	---	---	---
Other legislative im- poundments.....	5,248	275	---	---	-\$275 (2)
Working funds unobli- gated.....	49,773	---	---	---	---
Total appropriation....	420,000	357,107	373,424	+ 16,317	

The increase of \$16,317 for 1936 includes:

- (1) An increase of \$16,592 for 5% salary restoration, 1936 (to 100%).
- (2) Reduction of \$275, continuing 1935 impoundment.

Hog cholera is the most destructive disease of swine in our country. The direct annual losses have varied from eighteen to sixty-five million dollars annually. Funds appropriated for hog-cholera work are used to study the disease, including the ways by which it is disseminated and the most effectual means of prevention to cooperate with the various States in control measures, and the supervision of the commercial production of biological products, including anti-hog-cholera serum and virus under the provisions of the Virus, Serum, Toxins Act.

(h) ERADICATING DOURINE

Appropriation, 1932	\$32,800
Appropriation, 1933	29,900
Appropriation, 1934	25,000

Appropriation, 1935	8,242 (a)
Budget Estimate, 1936	<u>8,613</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>371</u>

(a) Includes \$371 to cover 5% salary adjustment 1935 (to 95%); this amount transferred from appropriation Eradicating Tuberculosis.

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Eradicating Dourine	\$3,000	\$8,242	\$8,613	(1) \$371	---
<u>Unobligated:</u>					
Salary reduction im-					
poundments.....	86	---	---	---	---
Other legislative					
impoundments.....	---	---	---	---	---
Working funds un-					
obligated.....	21,914	---	---	---	---
	25,000	8,242	8,613	+ 371 (1)	

(1) The increase of \$371 is for 5% salary restoration, 1936 (to 100%)

WORK DONE UNDER THIS APPROPRIATION

In cooperation with State livestock sanitary authorities and on Indian reservations with the Office of Indians Affairs, horses in areas where the infection of dourine is believed to exist are rounded up and samples of blood obtained for subjection to a laboratory test. Horses reacting to the test are slaughtered and owners other than Indians on a reservation indemnified by the State and Federal Government. Indemnity to Indians is paid by the Office of Indian Affairs. Surplus stallions are castrated. Wherever possible the roundup in the early summer is followed by a further roundup and retest later in the season. It is hoped that with more vigorous efforts, especially on the Indian reservations, this malady may soon be completely exterminated.

(i) PACKERS AND STOCKYARDS ADMINISTRATION

Appropriation, 1932.	\$ 402,880
Appropriation, 1933.	374,700
Appropriation, 1934.	350,200

Appropriation, 1935.	320,923 (a)
Budget Estimate, 1936.	<u>331,879</u>
Increase, Budget 1936, compared with	
Appropriation, 1935.	<u>10,956</u>

(a) Includes \$10,956 to cover 5% salary adjustment 1935 (to 95%); this amount transferred from appropriation "Eradicating Tuberculosis."

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Enforcement of the Packers & Stockyards Act.....	\$280,928	\$319,923	\$331,879	(1)\$13,325	-\$1,369(2)
<u>Unobligated:</u>					
Salary reduction im- poundment.....	10,739	---	---	---	---
Other legislative impoundments.....	6,615	1,000	---	---	-1,000(3)
Working funds unobli- gated.....	51,918	---	---	---	---
Total appropriation....	350,200	320,923	331,879	+ 10,956	

The increase of \$10,956 for 1936 includes:

(1) An increase of \$13,325 for 5% salary restoration, 1936 (to 100%).

(2) A decrease of \$1,369 by transfer to Department of Interior for cleaning service.

(3) Reduction of ~~\$275~~ ^{1,000}, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

The work under this appropriation embraces supervision of the business of packers, stockyard owners, market agencies, and dealers engaged in interstate commerce, and includes regulation of practices and rates and charges for service rendered at posted stockyards. Jurisdiction is exercised through 20 field offices, over approximately 1300 market agencies and 3200 dealers at 73 stockyards. Varied activities are carried on under this project, the more important of which are (1) registration and bonding of market agencies and dealers; (2) investigations of complaints as to unfair and unjustly discriminatory practices; (3) supervision of the testing and maintenance of livestock scales at the various markets; (4) valuation of the properties of stockyards companies, which includes inventories and appraisals of the real estate and physical structures of such companies, together with comprehensive analysis of their financial operations and organization and complete audits of their books and records, for the purpose of obtaining information for the use of the Secretary in determining the reasonableness and lawfulness of rates and charges for stockyard services; and (5) investigations of the operations of commission men and audits and analyses of their books and records in connection with the determination of rates which would be reasonable for them to charge for the purchase and sale of livestock at public markets.

(j) MEAT INSPECTION

Appropriation, 1932.	\$ 5,661,140 (a)
Appropriation, 1933.	5,604,860 (a)
Appropriation, 1934.	5,074,590 (a)

Appropriation, 1935.	5,091,979 (a)(b)
Budget Estimate, 1936.	<u>5,355,135 (c)</u>
Increase, Budget 1936, compared with	
Appropriation, 1935.	<u>263,156</u>

- (a) Includes \$3,000,000 permanent annual appropriation.
- (b) Includes \$263,156 to cover 5% salary adjustment 1935 (to 95%); this amount transferred from appropriation Eradicating Tuberculosis.
- (c) Effective July 1, 1935, the so-called permanent annual appropriation of \$3,000,000 for meat inspection will be merged with the appropriation contained in the Agricultural Appropriation Act and carried thereafter as an annual appropriation from the general fund of the Treasury, as provided by section 2(a) of "Permanent Appropriation Repeal Act, 1934," approved June 26, 1934. This section, in addition to abolishing the permanent annual meat-inspection appropriation as such, and requiring that estimates be submitted annually to carry out the Meat Inspection Act, contains the following proviso:

"That in addition to amounts in lieu of the permanent appropriation 'Meat Inspection, Bureau of Animal Industry' there is authorized to be appropriated such other sums as may be necessary in the enforcement of the meat inspection laws (U.S.C., title 21, secs. 71 to 96, inclusive.)"

PROJECT STATEMENT

Projects	1934	1935	1936	Increase or decrease	
		(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Special supervisory inspection.....	\$ 3,387	\$ 10,440	\$ 10,970	\$ 530	---
Laboratory inspection.....	75,574	84,299	88,600	4,301	---
Antemortem inspection of animals for slaughter.....	225,999	274,591	288,595	14,004	---
Postmortem inspection of animals.....	2,235,689	2,465,773	2,591,525	125,752	---
Control over the preparation of meats and meat food products....	1,944,794	2,203,441	2,319,284	115,843	---
Inspection at public markets.....	619	840	883	43	---
Control over operations, conducted under certificates of exemption.....	893	1,955	2,055	100	---
Inspection of imported meats and meat food products	27,406	28,330	29,775	1,445	---
Chemical investigations of meats and meat food products.....	6,459	7,810	8,208	398	---
Investigation of pathological conditions noted during meat inspection.....	7,978	10,000	10,510	510	---
Zoological investigations relating to meat inspection.....	1,997	4,500	4,730	230	---
Total obligations.	4,530,795	5,091,979	5,355,135	(1)263,156	---
<u>Unobligated:</u>					
Salary reduction impoundments.....	510,628*	---	---	---	---
Other legislative impoundments.....	16,061	---	---	---	---
Other amounts unobligated.....	17,106	---	---	---	---
Total appropriation	5,074,590	5,091,979	5,355,135	+ 263,156 (1)	

(1) The increase of \$263,156 is for 5% salary restoration, 1933 (to 100%).

(*) Includes a reduction of \$450,000 made by Director of the Bureau of the Budget pursuant to Sec. 5(c) of Treasury-Postoffice Appropriation Act, fiscal year 1934, constituting 15 percent of the total permanent annual appropriation of \$3,000,000 for meat inspection for that year and representing the savings estimated to be effected in the fiscal year 1934 under Sections 5 and 7 of said Act.

WORK DONE UNDER THIS APPROPRIATION

The purpose of the meat inspection service is to detect, eliminate and dispose of carcasses and meat food products found to be diseased, unwholesome, or otherwise unfit for human food; to see that meat and meat food products for human consumption are prepared in a cleanly manner; to guard against the use of harmful dyes, chemicals and other deleterious substances; to prevent the use of false or misleading names or statements on labels; and to supervise the interstate transportation, exportation, and importation of meat and meat food products.

(k) ERADICATING FOOT-AND-MOUTH AND OTHER CONTAGIOUS
DISEASES OF ANIMALS

This item continues the availability for the fiscal year 1936 of the unexpended balance of the appropriation of \$3,500,000 made in 1924 to be used in case of an emergency arising from an outbreak of foot-and-mouth or other contagious diseases of animals. The unexpended balance on June 30, 1934, was \$1,314,429. No expenditures are contemplated during the fiscal year 1935 unless an emergency arises, but continuation of the availability of this fund is imperative for the protection of our American livestock industry.

EMERGENCY FUNDS

Direct Allotments

Projects	:Obligated:Estimated,	
	: 1934	: 1935
(1) <u>Agricultural Adjustment Administration (Jones-Connally Act funds)</u>		
Elimination of diseased livestock:		
(a) In droughtstricken areas.....	- - -	\$148,865
<p>The object of the work done by the Bureau is to assist in the program of the Agricultural Adjustment Administration to reduce the cattle population in the sections of the country most severely afflicted by the drought.</p> <p>The work consists of inspecting animals on farms to determine whether they are diseased or emaciated to the extent that they should be condemned and destroyed on the premises, or are in fit condition to be delivered to the Federal Emergency Relief Administration for immediate slaughter or for shipment to States where pasturage is available.</p>		
(b) Eradicating bovine tuberculosis.....	- - -	9,000,000 (a)
<p>The object of this work is to assist in the cattle reduction program of the Agricultural Adjustment Administration by expanding and intensifying the campaign to control and eradicate tuberculosis among cattle under the uniform plan, in cooperation with the various States and Territories.</p> <p>The work consists of administering the tuberculin test to cattle to determine whether they are affected with tuberculosis, and the removal of reactor animals. All animals classified as reactors are disposed of by slaughter under Federal or State supervision.</p>		

(a) In addition, \$3,000,000 is available from Jones-Connally Act funds for like purposes in the fiscal year 1936.

Projects	:Obligated, : Estimated,	
	: 1934	: 1935
(c) Combating Bang's disease*	- - -	\$ 11,000,000(b)
<p>The object of this work is to assist in the cattle reduction program of the Agricultural Adjustment Administration by eliminating cattle which react to the blood test for Bang's disease (contagious abortion.) This work is conducted cooperatively in the various States, and the signing of an agreement on the part of the owner is voluntary.</p> <p>The work consists of collecting blood samples from cattle in herds voluntarily submitted for the test by the owners, the testing of samples in the field and in laboratories to determine whether Bang's disease is present, and the removal of reacting animals from the herd. These animals are disposed of by slaughter under Federal or State supervision.</p>		
(d) Combating Mastitis in cattle	- - -	1,000,000
<p>The object of the work is to assist in the cattle reduction program of the Agricultural Adjustment Administration by eliminating cows which show marked physical evidence of mastitis.</p> <p>The work consists of the physical examination of cows by veterinary inspectors to determine whether they show marked evidence of mastitis. Such animals are removed from the herd and disposed of by slaughter under Federal or State supervision.</p>		
(e) Campaign for reduction in swine production..	\$104,415	- - -
(f) Purchase of hogs for the Federal Surplus Relief Corporation	11,171	- - -
Total, by transfer from Agricultural Adjustment Administration (Jones-Connolly Act).....	115,586	21,148,865
(2) <u>Loans and Relief in Stricken Agricultural Areas:</u>	<u>Estimated</u>	
For relief in drought-stricken areas through reduction in number of surplus cattle	<u>1935</u>	
	\$2,494,242	

(b) In addition, \$6,000,000 is available from Jones-Connolly Act funds for the fiscal year 1936.

Projects	Obligated, 1934	Estimated, 1935
(3) <u>Public Works Allotments (National Industrial Recovery Act):</u>		
<u>Glendale, Arizona:</u>		
Repairs and painting of buildings	\$ 3,750	- - -
Construction of garage and machinery shed.....	1,125	- - -
Construction of cottage	3,596	\$ 154
Construction of laboratory	5,267	358
Construction of feed storage shed	2,828	172
Reconditioning irrigation system, building fences and roads	5,438	187
<u>Brooksville, Florida:</u>		
Completing water system	9,235	140
Repairs to and painting of buildings.....	6,461	477
Clearing land	9,187	- - -
Drainage of land	7,748	127
Fence repairs	1,875	- - -
Road repairs	936	189
Cattle barn, feed lots, silos, etc.	10,142	3,733
Sanitary comfort stations	718	407
<u>Dubois, Idaho:</u>		
Enlargement of casing and capacity of well.....	1,500	- - -
Remodeling and painting building.....	5,250	- - -
Fencing	3,750	- - -
Roads and trails	3,750	- - -
<u>Jeanerette, Louisiana:</u>		
Fence construction and repairs	12,915	210
Repairs to and painting of buildings	5,496	129
Drainage	16,253	622
Road repairs	3,750	- - -
Repairs to water system	5,244	381
Building and facilities for slaughtering, cutting and curing under farm conditions	3,434	316
Laboratories, Addition to office, irrigation system, etc.	13,248	1,752
Shed for record-of-performance steers	2,635	1,040
<u>Beltsville, Maryland:</u>		
Repairs and extension to water system	15,758	142
Reconditioning power line	3,375	- - -
Fencing and fence repairs	12,891	2,509
Completion of poultry fattening building.....	7,192	8,218
Clearing land	19,585	- - -

Projects	Obligated,	Estimated,
	1934	1935
Bull barn	\$ 1,643	\$ 157
Sheep barn	7,500	- - -
Sheep barn	3,750	- - -
Building for storage of farm machinery, equipment and supplies	11,562	7,938
Remodeling abattoir	6,236	514
Repairing refrigeration system	369	7,881
Dual purpose cattle barn	6,787	- - -
Repairs to beef cattle barn, bull pens, calf sheds and lot	11,250	- - -
Roads and bridges on farm	18,596	404
Essential repairs and painting of buildings	13,125	- - -
Dual purpose cattle barn	14,763	237
Separate room for farm curing of meats.....	1,125	- - -
Calf barn	4,500	- - -
Repairs of abattoir lots and facilities for making post mortems	3,750	1,225
Removal of stumps	6,000	- - -
Assembly building and comfort station; swine-record- of-performance project	6,000	5,000
Enlarging septic tanks and sewage systems	11,250	- - -
Field drainage	7,500	- - -
Goat barn and milk production equipment	3,000	- - -
Engineering administration and incidental expenses, for Animal Industry projects; nutrition laboratory	975	1,275
Meter house	750	- - -
Completing poultry parasite building	2,900	- - -
Repairs to building on Grain tract	1,103	- - -
Manure pit	4,125	- - -
Repairs to south cattle and hay storage barns	1,125	- - -
New animal shelters (animal parasite studies).....	8,171	1,829
Isolation laboratory (animal parasite studies).....	9,223	1,617
Main laboratory building (animal parasite studies).. Nutrition laboratory, repair and extension of water system; reconditioning farm power line; completion of poultry fattening building; farm roads and bridges; goat barn and milk production equipment; moving hog equipment; physical im- provements for poultry production record project; physical improvements for turkey breeding, nutri- tion, and management project; consulting, engineer- ing and architectural services and overhead expenses for Beltsville Experimental Farm; trans- portation and supervision of labor furnished by F.E.R.A. used in fence, water supply, sewer, and road construction and in clearing land; transient camp for F.E.R.A. labor.....	4,591	45,409
	302,247	484,632

Projects	Obligated, 1934	Estimated, 1935
General administration expenses; repair and extension of farm water system; transportation and supervision of labor furnished by F.E.R.A. used in fence, water supply, sewer, and road construction and in clearing land.....	\$ 3,518	\$ 56,482
Poultry building: Completion of poultry fattening building: Physical improvements for poultry record of performance project	29,716	14,765
Fundamental poultry research building; repair and extension of farm water system; completion of poultry fattening building; physical improvements for turkey breeding, nutrition and management project	29,183	24,572
Moving present frame buildings to new sites; completion of poultry fattening building.....	23,607	5,893
Feed and market poultry building.....	11,768	232
Laying houses (2)	12,398	602
Fencing poultry plant	6,892	108
Drainage	7,868	132
Moving hog equipment; preparing sewer plans.....	18,251	1,749
Purchase of land leased and under option.....	40,000	- - -
Purchase of additional land	68,023	6,977
Moving Bethesda Station to Beltsville	91,956	173,044
Change location of main work-horse barn and to provide a site for main laboratory building	12,000	- - -
<u>McNeill, Mississippi:</u>		
Fencing	1,871	379
Drainage and road repairs	2,029	596
<u>Miles City, Montana:</u>		
Remodeling laboratory buildings	386	3,364
Fencing	9,814	2,561
Remodeling barn for steers	4,425	- - -
Rearranging buildings and facilities for slaughtering, cooling, cutting and curing under farm conditions	883	12,242
Essential repairs and painting of fifty buildings...	9,799	1,451
Roads and bridges	9,214	161
Beef and dual purpose cattle building and equipment, and building for horses	17,024	976
<u>Middleburg, Vermont:</u>		
Fencing.....	5,865	135
Sheep barn repairs	3,750	- - -
Remodeling of cattle and horse barns and painting of buildings	12,702	798

	: Obligated,	: Estimated,
	:	:
Projects	: 1934	: 1935
Dixon Springs Pasture and Erosion Control: For	:	:
the establishment of a correlated project for	:	:
the study of soil erosion on land of the Shawnee:	:	:
National Forest in the State of Illinois, to be	:	:
carried on cooperatively by Animal Industry,	:	:
Plant Industry, Chemistry and Soils, Agriculture:	:	:
Engineering, Forest Service, Soil Erosion Ser-	:	:
vice and University of Illinois, including build-	:	:
ings and repairs, fencing, water development,	:	:
erosion control, drainage and miscellaneous ex-	:	:
penses	: - - -	: \$40,000
Total, P.W.A. Allotments	: \$1,111,190	: \$ 926,600

WORK UNDER P.W.A. ALLOTMENTS

This money represents allotments made by the Public Works Administration for improvements at the Bureau of Animal Industry experimental farms at the various locations named above. These funds were designated to provide employment for laborers and artisans and at the same time to increase the facilities for research along livestock lines.

EMERGENCY FUNDS - BUREAU TOTAL

Summary

	: Obligated,	: Estimated,
	:	: obligations
Projects	: 1934	: 1935
Transferred from Agricultural Adjustment	:	:
Administration for elimination of diseased	:	:
livestock (Jones-Connally Act)	: \$115,586	: \$21,148,865
"Loans and Relief in stricken Agricultural	:	:
Areas," for purchase of surplus cattle.....	: - - -	: 2,494,242
Public Works Allotments, under National	:	:
Industrial Recovery Act, for physical	:	:
improvements	: 1,111,190	: 926,600
Total, Emergency Funds, B.A.I. proper (a).....	: \$1,226,776	: \$24,569,707

(a) See also "Experiments and Demonstrations in Livestock Production," under "Miscellaneous Section".

PASSENGER-CARRYING VEHICLES

A net increase of \$6,485 is recommended for replacement of 14 passenger-carrying automobiles, at an average cost of \$463, taking into account the value of the turned-in cars. This avoids the continued use of worn out cars at excessive maintenance costs. Automobiles are an absolute necessity in carrying on this Bureau's activities in the eradication and control of animal diseases, such as cattle ticks, scabies, bovine tuberculosis, and control measures on hog cholera. Ranches and farms to which there are no means of public conveyance are constantly visited in the application of the tuberculin tests, the enforcement of dipping regulations, and in the supervision of the cleaning and disinfection of infected premises. Figures compiled over a term of years show that the cost of running government owned cars is from one to one and a half cents cheaper per mile than the reimbursement to employees at the usual price of five cents a mile for the use of their own cars.

Note.--See also Miscellaneous Section for "Experiments and Demonstrations in Livestock Production in Southern United States."

(a) GENERAL ADMINISTRATIVE EXPENSES

Appropriation, 1932 \$69,580
 Appropriation, 1933 69,380
 Appropriation, 1934 64,265

 Appropriation, 1935 59,448 (a)
 Budget Estimate, 1936 66,075
 Increase, Budget, 1936, compared with
 Appropriation, 1935 6,627 (b)

(a) Includes \$2,934 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$1,276 transferred from Bureau of Animal Industry; and (2) \$1,658 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(b) Increase of \$6,627 compared with 1935 appropriation consists of:

5% salary restoration, 1936 (to 100%).. + \$2,907
 Transfer from Dairy Investigations..... + 4,440
 Transfer to Interior Department for cleaning service - 720
 + 6,627

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
Obligated:					
Administration.....	\$54,602	\$59,448	\$66,075	(1) \$ 2,907	+\$3,720 ⁽²⁾
Unobligated:					
Salary reduction.					
impoundments.....	3,023	-----	-----	-----	-----
Other legislative					
impoundments.....	602	-----	-----	-----	-----
Other amounts					
unobligated.....	6,038	-----	-----	-----	-----
Total appropriation.....	64,265	59,448	66,075	+6,627	

The increase of \$6,627 for 1936 includes:

- (1) An increase of \$2,907 for 5% salary restoration, 1936 (to 100%).
- (2) An increase of \$3,720 in working funds, consisting of (a) an increase of \$4,440 by transfer of personnel from the item for Dairy Investigations with a corresponding decrease in amount of that item; and (b) a decrease of \$720 by transfer to the Department of the Interior for cleaning service.

WORK DONE UNDER THIS APPROPRIATION

The work conducted under this appropriation includes the direction of research, engineering, information, library and service activities, the administration of fiscal and property work, and general supervision of personnel.

(b) DAIRY INVESTIGATIONS

Appropriation, 1932	\$ 727,410
Appropriation, 1933	648,068
Appropriation, 1934	590,865

Appropriation, 1935	524,819 (a)
Budget Estimate, 1936	<u>570,104</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>45,285 (b)</u>

(a) Includes \$21,471 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$9,340 transferred from Bureau of Animal Industry; and (2) \$12,131 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(b) Increase of \$45,285 compared with 1935 appropriation consists of -

5% salary restoration, 1936 (to 100%).....	+ \$21,525
Increase in working funds.....	+ 33,770
Transfer to "General Administrative Expenses".....	- 4,440
Reduction: Transfer to Department of the Interior for cleaning service.....	- 3,800
Reduction: Offset of 1935 vacancy impoundments...	- <u>1,770</u>
	+ <u>45,285</u>

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Dairy Manufacturing investigations and introduction.....	\$50,739	\$58,644	\$ 91,275	\$ 2,934	+\$29,697 ⁽²⁾
Dairy herd improve- ment	46,194	42,970	43,050	1,952	- 1,872 ⁽³⁾
Dairy cattle breed- ing, feeding, and management.....	110,702	118,164	122,443	4,606	- 327 ⁽⁴⁾
Ice cream investiga- tions.....	11,206	12,204	12,801	597	-----
Butter and by-products investigations.....	20,879	23,148	23,461	1,017	- 704 ⁽⁵⁾
Condensed milk and milk powder.....	25,917	28,788	30,154	1,366	-----
Bacteriology and chemistry of milk..	14,141	15,432	15,196	784	- 1,020 ⁽⁶⁾

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
<u>Obligated: (cont'd)</u>					
Nutrition of dairy cows.....	48,723	54,396	56,496	2,100	-----
Cheese manufacturing investigations.....	25,049	25,224	26,290	1,066	-----
Market-milk investigations.....	23,007	27,564	28,520	1,200	- 244(7)
Operation and maintenance, Beltsville (Md.) research center	45,872	49,056	50,856	1,800	-----
Missouri (Hatch) experiment station...	4,858	5,065	5,165	100	-----
Huntley, Mont. field station.....	10,480	11,944	12,279	335	-----
Mandan, North Dakota, field station.....	13,167	13,434	13,834	400	-----
Woodward, Okla., field station.....	9,255	9,950	10,270	320	-----
Lewisburg, Tenn., field station.....	16,710	16,920	17,620	700	-----
South Carolina experiment station.....	9,363	10,146	10,394	248	-----
Total obligations	486,262	523,049	570,104	(1) 21,525	+25,530
<u>Unobligated:</u>					
Salary reduction im- poundments.....	21,300	-----	-----	-----	-----
Other legislative im- poundments.....	10,385	1,770	-----	-----	-1,770 (8)
Other amounts unobligated.....	72,918	-----	-----	-----	-----
Total appropriation	590,865	524,819	570,104	+ 45,285	

The increase of \$45,285 for 1936 includes:

(1) An increase of \$21,525 for 5% salary restoration, 1936 (to 100%).

An increase of \$25,530 in working funds consisting of:

Project	Transfer to	Transfer to	Offset-	Operation	Net
	"General Ad- ministrative Expenses"	Interior De- partment for clean- ing Service	ting vacan- cy im- poundments 1935	of Belts- ville Creamery	
(2) Dairy Manufactur- ing investiga- tions and intro- ductions.....	-\$1,200	- \$608	+ 285	+32,000(a)	+29,697
(3) Dairy herd improve- ments.....	- 1,440	- 810	+ 378	-----	-1,872
(4) Dairy cattle breed- ing, feeding and management.....	-----	- 608	+ 281	-----	- 327
(5) Butter and by-pro- ducts investiga- tions.....	-----	-1,318	+ 614	-----	- 704
(6) Bacteriology and chemistry of milk	-1,020	-----	-----	-----	-1,020
(7) Market-milk investi- gations.....	-----	- 456	+ 212	-----	- 244
Total, (2)-(7).....	-4,440	-3,800	+1,770	+32,000	+25,530

(8) A decrease of \$1,770 offsetting 1935 vacancy impoundments.

(a) This increase of \$32,000 is proposed for the operation of a semi-commercial creamery at the Beltsville (Md.) research center in lieu of cooperation with the Grove City Creamery, Grove City, Pa.

For some years it has seemed desirable in the interest of efficiency to establish a semi-commercial factory in closer proximity to the Bureau laboratories in Washington than Grove City, Pa., where results of laboratory experimentation could be tried out on a scale sufficiently large to determine the manufacturing features involved and to adjust the process to meet the requirements of industry. Therefore, a building for this purpose is now under construction at the Beltsville, Md., station. This building will be completed and fully equipped during the current fiscal year, and it is desirable to place it in operation during the fiscal year 1936.

WORK DONE UNDER THIS APPROPRIATION

This appropriation is used for scientific research and experimentation in practically all phases of the dairy industry, under the following projects:

Dairy Manufacturing Investigations and Introduction. The work conducted under this project is designed to ascertain the need for new and/or improved processes of manufacture; to determine factors affecting the quality of butter, cheese and other dairy products; it contemplates the development

1. The first part of the document is a list of names and addresses, which are arranged in a columnar format. The names are written in a cursive script, and the addresses are written in a more formal, printed style. The list is organized into two main sections, with the first section containing names and the second section containing addresses.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	12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and introduction of new and improved methods for making and packaging dairy products and by-products resulting from the research activities of the Bureau and includes efforts through educational activities, cooperation with state colleges and direct assistance to operators of commercial plants to bring about more efficient plant operation with particular reference to market grades and increased consumption. Regulatory work incident to the manufacture of renovated or process butter is a part of this Bureau project.

Many creameries are manufacturing butter which is below a reasonable standard for good table butter, the manufacturing process employed is not in accordance with the best practices, and management policies are, in some respects, antiquated. At plants where these conditions prevail the prices paid farmers for butterfat are relatively low. As a result of work conducted excessive losses of butterfat in the manufacturing operations have been eliminated, and the quality of cream received from farmers has been materially improved as a result of paying for cream on the basis of the quality of butter that can be made from it.

The research laboratories of the Bureau have developed a Roquefort cheese made from cow's milk, a method of packaging cheese through which Cheddar cheese is ripened and marketed in a vented tin container, and improved methods of making Swiss cheese. In order that the results of the work of the research laboratories may be of the greatest value to the industry it is necessary that these methods be developed commercially by demonstration in factories under commercial conditions.

The packaging of American Cheddar cheese in cans has been successfully demonstrated at several cheese factories and the process is now being developed on a commercial scale. The product is being favorably received by the consuming public.

American Roquefort cheese is also manufactured on a commercial scale and compares favorably in quality with the imported product.

The methods of making Swiss cheese as developed by the Bureau are now used in many factories. The average quality of cheese has been greatly improved through the use of these methods. In Ohio, where over 3,000,000 pounds of Swiss cheese are made annually, the Bureau methods are widely used and have increased the yearly income of factories over \$50,000.

The by-products of manufactured dairy products are largely wasted or inefficiently used. Over half of the milk produced in the United States is processed into manufactured dairy products. The resultant by-products--namely skim milk, buttermilk and whey--when utilized are often not processed according to the best methods developed by research. Consequently, millions of dollars are lost to the manufacturers which otherwise might be saved with the resultant increased return to both manufacturers and producers. The application to commercial plant conditions of new or improved methods as they are developed by research is therefore the primary work of this project. The products involved in this introduction work include cottage cheese, casein, concentrated sour skim milk, condensed skim milk, powdered skim milk, powdered and condensed buttermilk and milk sugar.

The introduction of new and improved methods of making casein has resulted in a greatly improved product. Previous to this work much of the domestic casein was of low grade, lacked uniformity and was often inferior to the imported product. Domestic casein is now more acceptable to the users because manufacturing methods have been standardized; marketing methods have been improved and casein manufacture generally is on a higher plane than formerly. Both manufacturer and consumer can benefit to the fullest extent only when the best and most efficient manufacturing methods developed by research are introduced into commercial fields.

This Bureau is required by law to make frequent sanitary inspections of all licensed renovated butter factories; to inspect the finished product; to approve or disapprove the marking and labeling of packages, cartons, and stencils used and to cooperate with the Bureau of Internal Revenue of the Treasury Department in detecting and preventing violations of the process or renovated butter act of May 9, 1902. The authority for the enforcement of this law is embodied in regulations issued jointly by the Secretary of Agriculture and the Secretary of the Treasury.

Dairy Herd-Improvement Investigations. The purpose of this work is the development of methods that lead to efficiency and economy of milk production, the elimination of low and inefficient producing cows, the use of better sires, and the adoption of better feeding practices. It is conducted along the following lines:

(a) Investigations based on herd and individual cow records are being conducted in cooperation with agricultural colleges in 46 states. A dairy herd-improvement association consists of about 26 dairy farmers who employ a tester to visit their farms regularly and who through a system of accounts and milk tests maintains complete production and feed cost records of each cow in the association.

On January 1, 1934, 793 such associations affecting approximately 14,000 dairymen were operating in the United States. The total number of dairy cows on which complete production and feed records are thus being kept exceeds 325,000. The records obtained in these associations perhaps are the most complete data available on the production of dairy cows in all parts of the country, and provide fundamental data for investigational work on the economy and efficiency of milk and butterfat production.

The organization and operation of dairy bull associations in the United States is another phase of the work conducted. On January 1, 1934, there were 351 such associations operating in 26 states with a membership of over 6,000 dairy farmers. Through these associations dairymen are able to obtain dairy bulls at a minimum cost, through the use of which a more economical production of milk and butterfat in a large number of herds will be assured.

(b) The development of methods that will lead to efficiency and economy of milk production, the elimination of low and inefficient producing cows and the adoption of better feeding practices. The results show that the cows on test in dairy herd-improvement associations produce about 90 percent more butterfat per cow than the average for the United States, and that more than 10 percent of the cows in such associations are eliminated

annually because they are proved to be inefficient and uneconomical producers.

(c) The analysis of data obtained through the medium of cow-testing associations to determine the degree of inheritance for milk and butterfat production certain dairy sires transmit to their daughters. A sire is proved by comparing the lactation records of his daughters with the lactation records of the dams of such daughters. The value of this work to the dairy industry is the definite identification of the high-producing blood strains in the various breeds, thus enabling breeders to conduct their breeding programs more intelligently.

Dairy Cattle Breeding, Feeding, and Management. The work of this project embraces fundamental research in all phases of dairy cattle breeding, feeding, and management. It is carried on largely at dairy experiment stations located at Beltsville, Md., Hannibal, Mo., Huntley, Mont., Mandan, N. Dak., Woodward, Okla., Lewisburg, Tenn., Columbia, S. C., and Jeanerette, La., and in cooperation with colleges and experiment stations in the States of California, Missouri, New Jersey, North Carolina, North Dakota, Oklahoma, Oregon, South Carolina, Utah, Washington, West Virginia, Alabama, Florida, Nevada, Kansas, Massachusetts, Michigan, Nebraska, Cornell University, New York Experiment Station, Pennsylvania, South Dakota, and Wisconsin, as follows:

(a) Determination of the comparative effects of out-breeding, line-breeding, and in-breeding, in fixing an inheritance for high levels of producing ability in dairy cows.

Out of this work has developed a plan of breeding pure lines for production by the continued use of meritoriously proved sires. It has led to the adoption by the National Dairy Cattle Breed Association of methods of sire analysis. The herds at the several dairy experiment stations are yielding the most complete scientific data on dairy cattle breeding ever assembled in the history of livestock breeding. The results secured in these herds, together with other available data, are used to illustrate the workings of the laws of heredity and their application to the problems of breeding better dairy cattle.

(b) Investigations on the relation of conformation to producing ability involving the determination of the relationship, if any, between conformation and anatomy of dairy cows to their producing ability; to establish, if possible, a scientific basis for judging and selecting dairy cattle from outward appearances. The judging of the milk and butterfat producing ability of cows by outward appearances is being taught in the various agricultural schools and colleges without any fundamental data in support of the theories being taught. Many established theories of judging the producing ability of cows on the basis of "type" have already been disproved. The object of this project is to establish a scientific basis for judging the producing ability of dairy cows. Detailed studies are also made of the udders of animals of known producing ability. Weights and measurements of the vital organs of these cows are also taken to study their relationship to

the function of milk secretion. Nineteen State Experiment Stations are cooperating.

(c) Fertility investigations to determine the effect of various factors on the fertility or lack of fertility in dairy animals. Few sires breed beyond 10 years of age and since their transmitting ability for level of production cannot be definitely established until they are from 6 to 8 years of age it is highly important that means be found to extend the breeding activity of meritorious sires to a more advanced age. Sterility in dairy cows is causing enormous losses to dairy farmers annually. It is estimated that approximately 20 percent of all cows eliminated from all dairy herds of the country are disposed of because of sterility. The object of the work being conducted, therefore, is to determine the effect of certain dietary regimes in the correction and prevention of certain forms of sterility and the effect of consistent exercise on the fertility of males. Many cases of sterility have been corrected by control of the diet and through exercise. Through the development of methods by which sperm cells may be kept viable, and through improvement in technique some success is being obtained by artificial insemination. More complete knowledge of the sperm cell, and methods of keeping them viable for long periods of time is being sought in order to facilitate artificial insemination. The normal reactions of female generative organs are also being investigated to determine the exact time of ovulation in relation to the period of oestrus.

(d) Milk secretion and reproduction investigations to determine the rate and amounts of milk secretion from individual quarters of the udder; the factors controlling secretion; types of mammary tissue and other factors that may facilitate milk secretion and make possible the elimination of stripping in the milking operation. Milk secretion experiments have indicated that a hormone of the pituitary gland is an important agent in normal milk secretion in dairy cows and may prove low production in some animals to be the result of a deficiency of this hormone, possibly hereditary in some strains. The effects of certain hormone injections in prolonging the period of fertility in aged bulls are being studied.

(e) Investigations to determine the influence of growth, relative total yields, and on economy of production of milk and butterfat of rations consisting entirely of roughages of different kinds and quality; and of rations consisting of these various roughages and varying amounts of concentrates or grains. These experiments have already yielded results that will have a vital bearing in sounder farming and animal husbandry practices. The values of various new feeds for milk production are also determined; as are the reasons for certain toxic effects of some common feed stuffs. In connection with the effects of preservation of color in roughages, the extent to which the color in these feeds is carried over into the milk and butter fat is being determined.

Pasture experiments are under way at the Beltsville and other field stations, many of which are conducted in cooperation with the Bureau of Plant Industry, to determine the best grasses and clovers to use for grazing in specified localities; the method of grazing and supplementary feeding that will result in the most profitable production and the relative economy of fertilization and other pasture management methods.

(f) Investigations to determine the stage of maturity at which to cut various roughage crops in order to secure feed crops that will produce the best yield, economy of production considered. Very important results have been secured in this work to date.

Various methods of ensiling crops are being tried out such as stack ensilage, pit silos, cold pack method of preservation - that is, treating the green material with dilute acids before ensiling; methods of ensiling grasses, and the relative influence of various methods in the preservation of the nutrients contained in the original material, the digestibility of the silage and its comparative economy as a feed stuff. Experiments are also under way to determine the relative economy and merits of preserving roughages by artificial drying; the effects of different temperatures of drying on digestibility of the feed and so on.

A number of experiments are carried out each year on one or more phases of this project. A three-year experiment is just being completed on the effect of eliminating stripping in the milking operation, or persistency of yield, percent of butterfat in the milk and tendency toward udder diseases. Data are being acquired on the relative labor costs of handling cows in pen barns and stanchion barns.

(g) The determination of the rations and of feeding methods for calves that will reduce mortality and assure growth during the early months of life is an important phase of the work under this project. The effect of rations consisting entirely of roughages starting at various ages and continuing to 2 years of age, on growth and condition of the animals is being investigated at present. Data over a period of years, are being accumulated on normal growth of calves under standard methods of feeding and the influence of out-breeding and in-breeding on normal growth.

Ice Cream Investigations. Investigational work under this project involves a determination of the physical and chemical factors incident to the manufacture of ice cream, with especial reference to the quality of the finished product. These investigations are designed to overcome manufacturing difficulties, to develop methods of manufacture whereby the quantity of milk solids may be increased, and the quality of product improved.

New products have been developed which will make it possible to increase the milk-solids-not-fat and thus enhance the food value and the palatability of the ice cream and at the same time enlarge the market for skimmed milk products.

New methods have been developed for the control of the density of ice cream and for combining ice cream in the final package with fruits and ices.

Butter and By-Products. The by-products of the butter and cheese industry, buttermilk, skimmilk, and whey, are largely wasted or inefficiently used. The milk solids produced annually in these three products amount to about 3,500,000,000 pounds. Results already obtained have provided increased outlets for this material by creating new products and improving the quality of old ones.

Objectionable flavors in butter and milk causing losses amounting to millions of dollars annually result from the oxidation of the fat. Methods for retarding or preventing these changes must be used on a thorough knowledge of the chemistry of oxidative changes and the factors which control them.

There is a large potential market for butter in the baking industry but certain technical difficulties in the use of butter in making bakery cake must be overcome before this market can be obtained.

Methods of making casein, used extensively in adhesives and in coating paper, have been perfected and standardized until it is possible to make a uniform grade especially suited to these purposes. The cause of foaming, one of the serious defects in paper coating solutions, have been removed.

Methods for the separation of lactalbumin, the soluble protein of milk, from the whey have been developed. The whey, obtained as a by-product in the manufacture of cheese, and casein, contains large quantities of lactose or milk sugar for which there is now only a limited market. The process of separating this sugar has been simplified and an efficient method of converting it into lactic acid has been developed. Further studies are under way to discover methods of converting the lactose or the lactic acid produced by its fermentation into products of value in the arts.

Condensed Milk and Milk Powder. Investigations have demonstrated that there are two types of milk differing greatly in their tendencies to coagulate upon sterilization. Variations in processing must be used to prevent defective product or loss of product during manufacture. A better knowledge of the characteristics of these milks is necessary for their identification, and better methods of processing are necessary to reduce losses and improve quality.

The use of evaporated milk is limited by the cooked flavor imparted by the high temperature of sterilization made necessary by the presence of heat resistant bacterial spores. Any process by which these spores can be made more sensitive to heat will enable manufacturers to reduce the sterilization temperature and consequently the cooked flavor. Investigations now under way are designed to solve this problem.

The increased use of powdered skimmed milk in the household is possible only through the development of a cheap, moisture-proof package. Preliminary experiments indicate that paper bags may be made which will be satisfactory for this purpose.

Improvement in quality and stability, and methods of use of powdered milks, through the application of the results of work done under this project have been factors in increasing consumption of these products by approximately 300 percent in 6 years. Further investigation of uses for dry skimmed milk and of the factors controlling deterioration in whole milk powder are essential to a greater utilization of these products.

Bacteriology and Chemistry of Milk. The manufacture of all dairy products is based on the control of bacteriological and chemical changes in milk, and the results of studies of these changes provide the basis for all laboratory investigation of an applied nature. Information already obtained from these investigations has made possible the development of a new fermentation industry, has greatly increased the efficiency of others, and has provided the foundation on which decided improvements in methods of making various dairy products has been based.

In the bacteriological examination of any food substance the differentiation of living from dead cells is of importance and methods which are being perfected for this purpose have been very useful in the cheese investigations.

The distribution of bacteria for cheese starters has become an important part of the work of the laboratory and the preparation of the starters in a dry form to reduce transportation costs and to prolong their viability is essential. This has been done successfully with some of the cultures.

Simple and rapid tests to estimate the bacteriological condition of milk is even more essential in the selection of milk for manufacturing purposes than for consumption in fluid form. The reduction of methylene blue has proven very useful but the study has been extended to include other dyes.

The quality of cheese, particularly Swiss cheese, is affecting favorably or adversely by the bacteriological condition of the milk and a thorough investigation of these relations is essential.

Very little has been known about the nature and properties of the fat-like substances in milk classed as lipoids and the study of these compounds, now nearly completed, has established their nature and their relation to the tests for fat in various products.

Studies on the effects of freezing on milk in various stages of concentration have revealed new and interesting facts some of which are likely to have applications of value to the industry.

Nutrition of Dairy Cows. The work conducted under this project has for its purpose the determination of the nutritional requirements of dairy cattle (1) for growth, (2) for maintenance of normal health, (3) for normal reproduction, and (4) for the process of milk secretion as well as the most practical and economical methods of furnishing these requirements. It includes a study of the physiology of the above processes as influenced by the nutrition of the animal. The following problems are illustrative of the types of work conducted:

(1) Investigations of the physiology of phosphorus and calcium metabolism of dairy cattle, including work on the mineral requirements of dairy cattle; the effect of mineral deficiencies upon health, reproduction, and milk secretion; the effect of quality of hay upon the assimilation of the calcium and phosphorus in it; the effect of vitamin D content of the diet upon the assimilation of these elements by lactating cows; the feeding of lime and phosphorus supplements, etc.; (2) studies of energy requirements of dairy cattle, (3) physiology of milk secretion as related to diet; (4) protein and amino acid requirements for maintenance, growth, and lactation; (5) the dietary requirements of dairy cattle that are furnished by roughages of various kinds and qualities, and (6) the vitamin requirements of dairy cattle, the vitamin content of feeds, and the variation in the vitamin content of milk.

Some of the work under this project involves feeding experiments running for several years. Other work involves metabolism studies lasting from a few weeks to several months. Although the work is directed toward the study of the nutrition of dairy cattle, small animals such as rats and rabbits are also used extensively in the experimental work.

Cheese Manufacturing Investigations. Five hundred million pounds of cheese are produced annually in the United States. Investigations are conducted under this item of the biological and chemical factors involved in the production of the characteristic flavors and physical properties of various foreign and domestic varieties of cheese. It has for its purpose the improvement of the quality of domestic cheese to provide an additional market for milk by replacing seventy-five million pounds of high-priced imported cheese with cheese of domestic manufacture. As a result of the work conducted under this project, a Roquefort cheese made from cow's milk is now manufactured on a commercial scale. Intensive work has been carried on with Swiss cheese, since this variety presents greater difficulties in manufacture inferior quality causing more loss than in the manufacture of any other kind of cheese. Three Swiss cheese cultures have been developed which are now extensively used in the industry to improve quality. A method of clarifying milk for the manufacture of Swiss cheese developed in the laboratories is now universally used throughout the industry to improve the quality of the product. The manufacture of Swiss and Cheddar cheese from pasteurized milk present difficulties in developing texture and flavor. These problems are being studied with a view of making pasteurization universal.

A more recent development is in the packaging of Cheddar cheese. Work has also been started on some of the milder flavored, quick ripening French and Italian cheeses. The manufacture of American Cheddar cheese, 360,000,000 pounds of which are produced annually, is handicapped by the unattractive and inconvenient method of marketing. A method developed in the laboratories is the first successful attempt to provide a satisfactory method of packaging without detriment either to the flavor or texture. It eliminates loss from evaporation of water, inedible rind, and mechanical waste in cutting.

Market-Milk Investigations. Under this project are conducted investigations in sanitary and economical methods of producing, transporting, processing, and distributing market milk and cream to be utilized in fluid form. These investigations include the production and handling of market milk under experimental as well as practical conditions on dairy farms, and a study of community milk improvement through milk control and extension agencies on the area plan. Investigations of the construction, equipment, and efficient operation of milk plants for the processing and preparation for the market of fluid milk and cream are also conducted, as are investigations in the laboratory and at commercial dairy farms and plants to ascertain factors affecting the marketability of milk and cream.

The purposes of the work being conducted are to prevent losses due to souring, spoilage, and other causes, to increase the market value of milk to the farmer, to increase consumption of milk, to make rural and urban milk supplies more safe; to effect economies in initial investments and operating costs of milk plants so as to reduce the spread between producers' and consumers' prices through greater efficiency in plant operation, to discover undesirable practices which impair the market qualities of milk and cream, and to devise remedial measures, as follows:

(a) Dairy Sanitation investigations to devise practical and economical methods and equipment for producing and handling milk of high sanitary quality. They include such factors as cooling, sterilization of milk-handling equipment, effect of certain udder conditions on the safety and marketability of milk, transportation, processing, etc. Research is carried on in the laboratory, at the Beltsville, experimental farm, and at commercial dairy farms and plants. Results of these researches enable dairymen to reduce losses through rejected and low-quality milk, and increase markets due to a more acceptable product. Cooperative work is conducted with other Governmental agencies, particularly the Veterans Administration and the Navy Department, in inspecting sources of milk supplies.

(b) Milk Plant Management investigations of the various factors entering into the processing and distributing of milk and cream for fluid consumption. They include time studies, arrangement of equipment to economize labor, efficiency of equipment, and construction of milk-handling plants. Similar work is also conducted in connection with country receiving stations, where milk is delivered by farmers to be cooled and shipped to the city. Results of this research will tend to lessen "spreads" between producer and consumer by the introduction of more

efficient methods. This project is of special importance to farmers' cooperative associations which operate receiving stations or milk-handling plants.

(c) Market Milk and Cream investigations to discover through scientific research practicable and economical methods for improving the marketability of milk and cream. They include such studies as the effect of feeds and other factors on flavors and odors of milk, homogenized milk, factors, affecting the viscosity of cream, and the development of new uses for milk. Improvement of the physical properties of milk tends to increase the quantity consumed, thereby extending the dairymen's market.

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated, 1934	Estimated obli- gations, 1935
<u>Public Works allotments (National Industrial Recovery Act):</u>		
Physical improvements at dairy experiment stations:		
Beltsville, Maryland research center.	\$ 124,353	\$ 146,147
Huntley, Montana, field station.....	500	-----
Lewisburg, Tennessee, field station..	8,150	-----
Mandan, North Dakota, field station..	1,867	2,583
Woodward, Oklahoma, field station....	2,270	-----
Total, P.W.A. allotments.....	137,140	148,730
<u>Loans and Relief in Stricken Agricultural Areas (Transferred from Agricultural Adjustment Administration):</u>		
Cooperative investigations of feeds and feed-stuffs in connection with agricultural adjustment programs.....	---	1,210
<u>Civil Works projects:</u>		
Land, road and equipment improvement:		
Supervision at dairy experiment stations.....	230	-----
Total, direct allotments as above	137,370	149,930

BUREAU OF PLANT INDUSTRY

(a) GENERAL ADMINISTRATIVE EXPENSES

Appropriation, 1932 \$ 210,266
 Appropriation, 1933 209,966
 Appropriation, 1934 193,639

Appropriation, 1935 180,784 (a)
 Budget Estimate, 1936 189,242
 Increase, Budget 1936, compared with
 Appropriation, 1935 8,458 (b)

(a) Includes \$9,215 to cover 5% salary adjustment for 1935, as follows:
 (1) \$4,008 transferred from Bureau of Animal Industry; and (2)
 \$5,207 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of \$8,458 compared with 1935 appropriation consists of--
 5% salary restoration, 1936 (to 100%) + 9,073
 Decrease in working funds for 1936 - 615
 + 8,458

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
<u>Obligated:</u>					
General Administrative	\$170,813	\$180,784	\$189,242	(1)\$9,073	- \$615(2)
<u>Unobligated:</u>					
Salary reduction					
impoundments.....	8,600	- - -	- - -	- - -	- - -
Other legislative					
impoundments.....	11,700	- - -	- - -	- - -	- - -
Other amounts unob-					
ligated.....	2,526	- - -	- - -	- - -	- - -
Total appropriation.....	193,639	180,784	189,242	+ 8,458	

The increase of \$8,458 for 1936 includes:

(1) An increase of \$9,073 for 5% salary restoration, 1936 (to 100%).

(2) A decrease of \$615 in working funds due to transfer of cleaning work to the Department of Interior.

WORK DONE UNDER THIS APPROPRIATION

General. The direction of the research, service and regulatory work by the Bureau of Plant Industry, including the projects supported largely by

National Recovery Act funds, the administration of fiscal affairs, the general supervision of personnel, the administrative review and preparation of its research and other publications and bibliographical and related library work, as well as the partial financing of such service activities as the photographic laboratory, are carried on under this appropriation.

(b) ARLINGTON FARM

Appropriation, 1932 \$ 60,600
 Appropriation, 1933 60,500
 Appropriation, 1934 51,545

Appropriation, 1935 47,142 (a)
 Budget Estimate, 1936 49,414
 Increase, Budget 1936, compared with
 Appropriation, 1935 2,272 (b)

(a) Includes \$2,673 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$1,163 transferred from Bureau of Animal Industry; and (2) \$1,510 from fund authorized by Sec. 21 (e) of Act March 28, 1934.

(b) Increase of \$2,272 compared with 1935 appropriation consists of--
 5% salary restoration, 1936 (to 100%) +\$2,322
 Reduction: Continuation of 1935 impoundment . . . - 50
 + 2,272

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
Obligated:					
Arlington Farm.....	\$ 41,345	\$ 47,092	\$ 49,414	(1) \$ 2,322	- - -
Unobligated:					
Salary reduction im- poundments.....	1,100	- - -	- - -	- - -	- - -
Other legislative im- poundments.....	- - -	50	- - -	- - -	- \$50(2)
Other amounts unobli- gated.....	9,100	- - -	- - -	- - -	- - -
Total appropriation....	51,545	47,142	49,414	+ 2,272	

The increase of \$2,272 for 1936 includes:

- (1) An increase of \$2,322 for 5% salary restoration, 1936 (to 100%).
- (2) A decrease of \$50, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General. A highly improved 500-acre tract in Virginia, near Washington, D. C., is maintained as an outdoor laboratory on which to conduct many phases of plant research of national scope. It also is provided with laboratories, greenhouses, barns, shops, and other buildings, furnishing facilities for conducting experiments covering a wide range of research, principally for the Bureau of Plant Industry, but also for Bureaus of Chemistry and Soils, Public Roads, Entomology and Plant Quarantine, Agricultural Engineering and other branches of this and other Departments. By furnishing common facilities needed in the many activities from a central station, much unnecessary duplication is avoided and the cost of operation appreciably reduced. This item provides funds for the general maintenance of the plant and farm facilities. The work of other divisions in the bureau and of other bureaus and departments is conducted at a cost on a reimbursement basis.

(c) BOTANY

Appropriation, 1932	\$ 56,260
Appropriation, 1933	42,060
Appropriation, 1934	39,113

Appropriation, 1935	35,584 (a)
Budget Estimate, 1936	<u>36,635</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>1,051 (b)</u>

(a) Includes \$1,768 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$769 transferred from Bureau of Animal Industry; and \$999 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(b) Increase of \$1,051 compared with 1935 appropriation consists of--

5% salary restoration, 1936 (to 100%)	+ 1,661
Decrease in working funds for 1936	- 560
Reduction: Continuation of 1935 impoundment	- 50
	+ <u>1,051</u>

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
Obligated:					
Botany.....	\$32,439	\$35,534	\$36,635	(1) \$1,661	- \$560(2)
Unobligated:					
Salary reduction impoundments.....	1,620	- - -	- - -	- - -	- - -
Other legislative impoundments.....	- - -	50	- - -	- - -	- - -
Other amounts unobli- gated.....	5,054	- - -	- - -	- - -	- - -
Total appropriation....	39,113	35,584	36,635	+ 1,051	

The increase of \$1,051 for 1936 includes:

- (1) An increase of \$1,661 for 5% salary restoration, 1936 (to 100%).
- (2) A decrease of \$560 in working funds due to transfer of cleaning work to the Department of Interior.
- (3) A reduction of \$50, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General. The work under this appropriation consists of the identification of wild and cultivated plants, special systematic studies of grasses that serve as a basis of forage, range, and erosion collection work and the domestication and improvement of wild plants, particularly the blueberry. Botanical studies conducted under this project serve as a starting point for numerous investigations made by the various branches of the Bureau of Plant Industry and other Bureaus of the Department. With the increased demands made upon this project by the Forest Service, the Erosion Control Agencies, and the inevitable increase of duties resulting from development of the National Arboretum, work under this project has become of major importance. The studies and identifications under this project are essential to the development of accurate and dependable plans for future work.

Work on economic botany consists chiefly of studies and identifications of plants other than grasses for various Bureaus of the Department. Assistance is also given to agricultural experiment stations, farmers, nurserymen, and other individuals and organizations. Information derived from this work is of primary importance in grazing and erosion work, investigations of plants poisonous to stock, forage experiments and other lines of work. Accurate and dependable studies and identifications are essential as a basis for investigations if reliable results are to be obtained.

Work on grass investigations includes systematic studies of both domestic and foreign grasses which serve as a basis for important grass

investigations from the forage and erosion standpoint. The collection of grass specimens maintained is the largest and most valuable reference collection in the world. The botanical studies conducted and publications built up as a result of these studies comprise a reference collection of information which is the basis of all important grass investigations of the Department. With the increased importance of forage and soil erosion projects, this work has become an important factor in the conduct of the investigations. Adequate and accurate reference is essential as a starting point for our grass projects.

The principal work on blueberry investigations has been the breeding of new varieties of blueberries earlier and later than those now in use, or of still better flavor and other desirable commercial qualities, or adapted to a latitude and climate farther south than existing varieties. The wide interest in blueberry culture has developed a rather extensive correspondence on the subject. The blueberry investigations have resulted in the domestication and improvement of the wild blueberry; in the addition of a luscious and healthful fruit to the dietary of city dwellers; in the establishment of a thriving and growing new industry of blueberry culture, and in the utilization of areas of special, strongly acid soils not adapted to other agricultural uses.

(d) CEREAL CROPS AND DISEASES

Appropriation, 1932	\$ 574,060
Appropriation, 1933	546,985 (a)
Appropriation, 1934	488,200

Appropriation, 1935	434,294 (b)
Budget Estimate, 1936	<u>451,923</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>17,629 (c)</u>

(a) Excludes \$7,500 of \$554,485 in regular appropriation for 1933 which was transferred to Fruit and Vegetable Crops and Diseases.

(b) Includes \$19,246 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$8,372 transferred from Bureau of Animal Industry; and (2) \$10,874 from fund authorized by Sec. 21(e) of Act March 28, 1934.

(c) Increase of \$17,629 compared with 1935 appropriation consists of -

5% salary restoration, 1936 (to 100%)	+ \$19,779
Decrease in working funds for 1936	- 1,800
Reduction: Continuation of 1935 impoundment	- <u>350</u>
	+ <u>17,629</u>

PROJECT STATEMENT

Projects	1934	1935	1936	Increase or decrease	
		(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Barley Production and Improvement.....	\$42,984	\$44,130	\$46,100	\$ 2,150	- \$180(2)
Corn Production and Improvement.....	108,880	106,055	110,270	4,655	- 440(3)
Seed Flax Production and Improvement (also buckwheat).....	14,585	14,855	15,820	1,025	- 60(4)
Grain sorghum and broomcorn (also proso millets, etc.).....	17,820	18,075	18,520	525	- 80(5)
Oat Production and Improvement.....	38,580	40,770	42,480	1,880	- 170(6)
Rice Production and Improvement.....	37,765	39,285	41,130	2,002	- 160(7)
Wheat Production and Improvement (also emmer, spelt, etc)...	157,395	170,774	177,603	7,539	- 710(8)
Total obligations.....	418,009	433,944	451,923	(1)19,779	-1,800
<u>Unobligated:</u>					
Salary reduction im- poundments.....	20,200	- - -	- - -	- - -	- - -
Other legislative im- poundments.....	19,330	350	- - -	- - -	- 350(9)
Other amounts unobli- gated.....	30,661	- - -	- - -	- - -	- - -
Total appropriation....	488,200	434,294	451,923	+ 17,629	

The increase of \$17,629 for 1936 includes:

- (1) An increase of \$19,779 for 5% salary restoration, 1936 (to 100%).

The following reductions in working funds due to transfer of cleaning work to the Department of the Interior:

(2) Barley Production and Improvement.	\$ 180
(3) Corn Production and Improvement.	440
(4) Seed Flax Production and Improvement	60
(5) Grain Sorghum and Broomcorn	80
(6) Oat Production and Improvement	170
(7) Rice Production and Improvement	160
(8) Wheat Production and Improvement	710
Total (2) to (8), inclusive	1,800

- (9) A decrease of \$350, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General. The work under this appropriation includes studies of cultural practices with cereal crops and investigation of their possible improvement, comparison of yield and adaptability of different varieties to different regions and their quality for different uses, together with the breeding and selection of improved and better-adapted varieties, and the development of methods of control of the diseases of all cereal crops, including the breeding of disease-resistant varieties. Cooperative experiments are carried on at most of the State agricultural experiment stations but no independent field stations are maintained.

The justification for this work lies in the importance of the cereal crops to the agriculture of the United States. Cereal crops not only supply directly an important part of the dietary requirements of the people, but, as feed for live stock, are the basis of our live stock and dairy industries as well. During the period from 1927 to 1931, inclusive, cereal crops occupied more than 225,000,000 acres each year, and even with the reduced acreages of 1934 occupy some 190,000,000 acres. Corn, the principal cereal crop, is the most important single crop of the country, in 1934 being grown on 92,500,000 acres. It is the backbone of American agriculture. On the basis of either unlimited or controlled production, increased efficiency and reduced costs are necessary for the profitable production of cereal crops and the consequent well-being of our agricultural population. Increased efficiency and reduced costs can only be attained through improvement in practices and varieties which will reduce the hazards incident to disease, reduced fertility, and, in so far as possible, the action of cold and drought. Without the improved varieties even now available, the results of the disastrous drought during the current season of 1934 would have been even more marked. The trained personnel engaged in this work also constitute an effective safeguard for the future welfare of the country. During the emergency of the current season, the existence of this effective going organization made possible the location and conservation of adapted seed stocks for succeeding crops that otherwise were in serious danger of being lost.

Barley production and improvement. During the five years ending with 1931 barley was grown on approximately 12,000,000 acres annually. It has become increasingly important in recent years as a feed grain, and with the return of commercial brewing there is again available an important special market for malting barley. Quality is a most important factor in determining price, high quality carrying a substantial market premium. The control of diseases and the improvement of varieties to insure quality is imperative in order to meet market needs and to insure profitable production. Studies of malting quality are pertinent and important.

Corn production and improvement. Corn is the most important single crop in this country. It is the foundation of American agriculture. It normally occupies approximately 100,000,000 acres annually, and even with reduced acreage in 1934 there were 92,500,000 acres. Higher yielding, better quality strains are needed to eliminate preventable hazards and to reduce production costs and losses in commercial channels. Disease and insect control through the breeding of resistant strains also is badly needed to prevent stand reduction in seedling corn and reduced quality in harvested grain. Special types for certain technical uses also should be developed.

Seed flax production and improvement (also buckwheat). Seed flax production is not extensive, but in the areas where the crop is grown, it is most important. During the 5 years, 1927 to 1931, the average harvest was 2,915,000 acres. The amount produced is less than domestic consumption, and there is opportunity for profitable increase in the present acreage. The production of this crop is entirely dependent on disease resistant varieties, and in emphasizing this factor, oil yield and quality heretofore have not been given necessary attention. There is definite need for improved varieties combining disease resistance with seed yield and oil yield and oil quality.

Grain sorghum and broomcorn (also proso, millets, etc.). Grain sorghums and broomcorn are normally grown on some 7,000,000 acres annually. The acreage is increasing. The crop is the standard feed and forage reliance of the entire south central United States, where drought and heat resistant summer crops are essential. Certain special types that can be harvested to advantage with machinery used for other grain crops have been developed, but more are needed to cover the entire sorghum growing area. Disease resistance to reduce preventable losses also is needed. Broomcorn varieties producing better quality brush and less affected in quality by weather conditions also are badly needed.

Oat production and improvement. Oats is the most important small grain feed crop of the country. It is also most important as a rotation crop for use in seeding clover and grasses throughout the country. In normal times some 40,000,000 acres of the crop are grown annually, and in 1934 with reduced acreage 33,348,000 acres were harvested. The quality of the crop is often seriously reduced by heat and drought and by diseases, and while progress has been made in developing better varieties, much remains to be done.

Rice production and improvement. Rice is a specialized crop grown on a limited acreage so far as the country as a whole is concerned, 750,000 to 950,000 acres annually, but where grown in Arkansas, Louisiana, Texas, and California, it is the basis of agriculture and represents a large and specialized investment. Lands used for this crop also are less suited for other types of cropping. The peculiar conditions under which the crop is grown, constant flooding, introduce many problems in soil fertility, pests, diseases, and special considerations of culture, rotation and use of fertilizers that require solution. Varieties of better culinary value, also, are needed to increase market demands.

Wheat production and improvement (also emmer, spelt, etc., and rye). Wheat is the staple food crop of the country, is the basis of agriculture in a large and important area, supports an extensive manufacturing and processing industry, and is a most important export product. Profits in wheat production are dependent on reducing hazards from cold, drought, disease, insects, poorly adapted varieties, and on the development of cultural and rotation practices that will reduce expense and at the same time stabilize production. Much has been accomplished in these lines, but much remains to be done to obtain desirable types for all areas. Tests on the milling and baking value of wheat varieties are conducted in cooperation with the Bureau of Agricultural Economics.

(e) COTTON AND OTHER FIBER CROPS AND DISEASES

Appropriation, 1932 \$ 233,140
 Appropriation, 1933 218,440
 Appropriation, 1934 219,541 (a)

Appropriation, 1935 198,670 (b)
 Budget Estimate, 1936 206,435
 Increase, Budget 1936, compared with
 Appropriation, 1935 7,765 (c)

(a) Includes \$19,541 transferred from "Rubber and Other Tropical Plants" for fiber plant investigations.

(b) Includes \$16,851 transferred from "Rubber and Other Tropical Plants" for Fiber plant investigations; and \$8,727 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$3,765 transferred from Bureau of Animal Industry; and (2) \$4,962 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(c) Increase of \$7,765 compared with 1935 appropriation consists of -
 5% salary restoration, 1936 (to 100%) + \$7,765
 Increase in working funds for 1936 + 744
 Reduction: Offset of 1935 vacancy impoundment . . . - 744
+ 7,765

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Cotton production, improvement, and diseases	\$160,381	\$180,801	\$187,698	\$6,897	- - -
Fiber plants other than cotton	16,100	17,125	18,737	868	+ \$744(2)
Total obligations	176,481	197,926	206,435	(1) 7,765	+ 744
<u>Unobligated:</u>					
Salary reduction impoundments	8,863	- - -	- - -	- - -	- - -
Other legislative impoundments	5,900	744	- - -	- - -	744(3)
Other amounts unob- ligated	28,297	- - -	- - -	- - -	- - -
Total appropriation . . .	219,541	198,670	206,435	+ 7,765	

The increase of \$7,765 for 1936 includes:

(1) An increase of \$7,765 for 5% salary restoration, 1936 (to 100%).

(2) An increase of \$744 in total available for obligation under project "Fiber plants other than cotton."

(3) A corresponding decrease (\$744), offsetting 1935 impoundment.

CHANGE IN LANGUAGE

The change in language in this item is caused by the transfer from the appropriation of Rubber, Fiber and Other Tropical Plants of our work on fiber crops, and merely provides for the inclusion of this activity under this appropriation.

WORK DONE UNDER THIS APPROPRIATION

General. The work done under this appropriation consists of the investigation of cultural practices for growing cotton; the breeding of superior varieties of cotton; the study of the effect of soil, climate, and other factors on the yield, quality, and values of cotton fiber; the study of chemical, physical, and other properties of cotton fibers which determine values for specified uses, and the measurement of probable values by means of these properties; the investigation of cotton diseases and their control including breeding for disease resistance; the utilization and maintenance of superior strains of cotton through the organization of single-variety communities; and the investigation of hemp and flax fiber production, and of hard fibers and other fibers used for ropes, twines, etc. It is conducted in cooperation with the Bureaus of Agricultural Economics and Agricultural Engineering, with the State agricultural experiment stations in the cotton-producing area, and with certain counties and group organizations.

Cotton production, improvement, and diseases. The work under this project consists of breeding operations to develop strains and types of cotton superior in yield and in lint character, and resistant to climatic and other factors reducing yield and quality. It also includes studies of the relation of climatic and other factors to fiber yield and quality, and means of measuring quality factors so that new cottons being developed may be tested for quality before distribution. It likewise includes studies on cotton diseases and their control, and of all other factors having to do with growing satisfactory yields of high quality cotton. The program is cooperative with the Bureaus of Agricultural Economics, Agricultural Engineering, Entomology and Plant Quarantine, and Chemistry and Soils, and with the State experimental stations of North Carolina, South Carolina, Georgia, Tennessee, Mississippi, Texas, New Mexico, Arizona and California.

Fiber plants other than cotton. Work under this project includes the investigation of hemp and flax fiber production in the United States and of hard fibers such as abaca (Manila hemp), maguey, sisal, and henequen in the tropics; and all plant fibers, except cotton, used for ropes, twines, yarns, woven fabrics, hats, matting and stuffing or filling.

Cotton is the bread and butter cash crop of the entire cotton-producing area. The crop also is of primary importance in domestic commerce and manufacture, 6,000,000 500-pound bales in round numbers being normal domestic consumption, and is the country's principal agricultural export product. The 1934 crop occupies 29,000,000 acres, and in the past has totalled in excess

of 40,000,000 acres. The 1933 crop of 13,000,000 bales was worth in excess of \$600,000,000. Intensive research on cotton is justified by its importance in the livelihood of such a large part of our population; by the necessity of improving and maintaining the improvement of American cotton in order to hold the export market in the face of an aggressive competition from high quality foreign production; and by the necessity for stabilizing production and of reducing production costs through removal of hazards caused by low quality, poor producing strains, diseases, faulty cultural practices, etc.

(f) DRUG AND RELATED PLANTS

Appropriation, 1932	\$ 58,120
Appropriation, 1933	42,720 (a)
Appropriation, 1934	39,840

Appropriation, 1935	35,807 (b)
Budget Estimate, 1936	<u>47,139</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>11,332 (c)</u>

- (a) Includes \$37,720 in regular appropriation for 1933 and \$5,000 transferred from Forage Crops and Diseases for downy mildew of hops.
- (b) Includes \$1,706 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$742 transferred from Bureau of Animal Industry; and (2) \$964 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.
- (c) Increase of \$11,332 compared with 1935 appropriation consists of -
- | | |
|---|----------------|
| 5% salary restoration, 1936 (to 100%) | +\$1,332 |
| Increase in working funds for 1936 | +10,050 |
| Reduction: Offset of 1935 vacancy impoundment | - 50 |
| | <u>+11,332</u> |

PROJECT STATEMENT

Projects	1934	1935	1936	Increase or decrease	
		(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Drug, poisonous and oil plants.....	\$ 23,590	\$ 27,557	\$ 38,644	\$ 1,037	+\$10,050(2)
Downy mildew of hops..	7,032	8,200	8,495	295	- - -
Total obligations.....	30,622	35,757	47,139	(1)1,332	+ 10,050
<u>Unobligated:</u>					
Salary reduction impoundments.....	1,400	- - -	- - -	- - -	- - -
Other legislative impoundments.....	3,000	50	- - -	- - -	- 50(3)
Other amounts unobligated.....	4,818	- - -	- - -	- - -	- - -
Total appropriation....	39,840	35,807	47,139	+ 11,332	

The increase of \$11,332 for 1936 includes:

(1) An increase of \$1,332 for 5% salary restoration, 1936 (to 100%).

(2) An increase of \$10,050 in the project for "Drug, Poisonous and Oil Plants." This increase is needed for Pyrethrum and Devil's shoestring experiments which are carried on during 1935 under P.W.A. Funds.

Pyrethrum: The possibilities of pyrethrum as a crop are being determined by trial plots in the following States: Maryland, Virginia, North Carolina, South Carolina, Georgia, Tennessee, Texas, Arizona, California, Oregon, Washington, Montana, Nebraska, Indiana, West Virginia, and Pennsylvania. These trial plots are maintained through cooperation with Bureau of Plant Industry field stations and State experiment stations, except in West Virginia and Pennsylvania where they are located on Subsistence Homestead projects. By means of these plots, it is expected to show to what conditions the crop is best adapted, where it is least affected by diseases, where production costs are likely to be lowest, and where it fits best into the established agricultural and economic life of the community.

Devil's shoestring: The root of this native legume in some localities possesses insecticidal properties due to the presence of rotenone and related substances. The first step in the investigation has been completed. It has shown that there are two principal regions in the natural range of the plant, that extend from New England to Texas, in which the roots are sufficiently toxic to be commercially useful as a source of non-poisonous spray material. One extends through south Georgia eastward into eastern Florida, and the other includes northeastern Texas and parts of Arkansas and Oklahoma. It is in these areas that the commercial growing of this plant seems to hold the most promise. It is absolutely essential that the factors influencing the development of toxicity in the root be determined by careful study in the

areas mentioned of the soil types, botanical variations and all other factors that may enter into the problem. The effects of cultural practices, fertilizers, etc., must also be determined. If it can be determined through such studies what conditions favor the storing of toxic substances in the root the possibilities of the plant as a commercial crop are greatly increased.

(3) A decrease of \$50 in the project "Drug, poisonous, and oil plants." This decrease is merely an offset for a corresponding increase estimated for obligation in 1936.

WORK DONE UNDER THIS APPROPRIATION

General. The work under this appropriation consists of investigations of plants yielding poisons, insecticides, essential oils, drying oils and perfumes, with respect to their culture, their constituents and their possibilities as crops in the United States; also studies on the downy mildew of hops, with particular reference to its control and to the development of new varieties resistant to the disease.

Drug, poisonous and oil plants. Plants that are important sources of products used in the manufacture of medicines, pharmaceuticals, flavoring materials, perfumes, insecticides, paints and varnishes, and related commodities, are grown experimentally to determine their cultural requirements, the proper methods of handling, the methods of obtaining the commercial products from them, their qualities under various conditions, and the cost of their production as a basis for their introduction into American agriculture.

This country is dependent upon foreign countries for most of the above products. In some cases such sources are not available during extensive world disturbances. Their domestic production insures a more steady supply and better quality for the consuming industries, and the growing of the plants producing them provides non-competitive cash crops for farmers to turn to in favorable localities during periods of staple crop surpluses. In view of the fact that farmers are entirely unacquainted with the special requirements of such plants much information must be obtained by preliminary investigations to provide the necessary background for their commercial introduction. This is primarily the objective of this project.

Downy mildew of hops. Under this project hop growers are being assisted in combating the ravages of the destructive downy mildew that has invaded the Pacific Coast hop fields. Two lines of attack are being used; the growers are advised regarding cultural practices that reduce the spread of the disease and instructed in the use of fungicides as sprays and dusts to control the losses; and development through breeding and selection of new varieties with good commercial qualities and resistant to the disease.

The brewing industry in this country is dependent almost entirely on the Pacific Coast States for its supply of domestic hops. Unless the downy mildew is effectively controlled, hop-growing may have to be abandoned in many of the localities where it is now an important industry. Aside from the economic loss suffered by the established growers the resultant shortage would necessitate more extensive use of the more expensive foreign hops, with a corresponding increase in the cost of brewing.

(g) DRY LAND AGRICULTURE

Appropriation, 1932 \$ 265,740
 Appropriation, 1933 242,260
 Appropriation, 1934 220,000

Appropriation, 1935 206,954 (a)
 Budget Estimate, 1936 215,578
 Increase, Budget 1936, compared
 with Appropriation, 1935. 8,624 (b)

(a) Includes \$9,009 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$3,919 transferred from Bureau of Animal Industry; and (2) \$5,090 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(b) Increase of \$8,624 compared with 1935 appropriation consists of -
 5% salary restoration, 1936 (to 100%) +\$9,157
 Decrease in working funds for 1936 - 358
 Reduction: Continuation of 1935 impoundment. . . . - 175
 + 8,624

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
Obligated:					
Dry land crop produc- tion.....	\$142,349	\$155,971	\$163,120	\$ 8,507	-\$358(2)
Dry land fruit and vegetable production..	22,748	29,317	30,317	1,000	- - -
Cooperative shelter- belt demonstrations and experimental test plantings.....	20,658	21,491	22,141	650	- - -
Total obligations.....	185,755	206,779	215,578	(1)9,157	- 358
Unobligated:					
Salary reduction im- poundments.....	10,000	- - -	- - -	- - -	- - -
Other legislative im- poundments.....	900	175	- - -	- - -	- 175(3)
Other amounts unobli- gated.....	23,345	- - -	- - -	- - -	- - -
Total appropriation.....	220,000	206,954	215,578	+8,624	

The increase of \$8,624 for 1936 includes:

(1) An increase of \$9,157 for 5% salary restoration, 1936 (to 100%).

(2) A decrease of \$358 in the project "Dry Land Crop Production". This decrease is a reduction in working funds due to transfer of cleaning work to the Department of Interior.

(3) A reduction of \$175, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General. Under this appropriation the problems of agricultural and horticultural development of the Great Plains and Intermountain areas, a region classed as semi-arid, are studied at field stations to obtain the fullest possible information concerning soil and climatic conditions throughout the region and the agricultural effectiveness of each of the many different methods of tillage and crop rotations that can be considered as more or less suitable for this region where irrigation is not available.

Field stations are maintained at the following points:

Akron, Colorado	Lawton, Oklahoma	Dalhart, Texas
Tucumcari, New Mexico	Woodward, Oklahoma	Sheridan, Wyoming
Mandan, North Dakota	Big Spring, Texas	

Investigations are conducted at stations maintained by the Division of Western Irrigation Agriculture, Bureau of Plant Industry, at the following points:

Huntley, Montana
Newell, South Dakota

Investigations are conducted in cooperation with States at State stations at the following points:

Colby, Kansas	Dickinson, N. Dak.	Havre, Montana
Garden City, Kansas	Archer, Wyoming	North Platte, Nebraska
Moccasin, Montana	Hays, Kansas	Pendleton, Oregon

Dry-land crop production. The work under this project consists of rotation and tillage experiments with cereal crops, forage crops and cotton, as well as pasture conservation and development in this region. (Bureau of Animal Industry cooperates with livestock experiments at Big Spring, Texas.) Crop rotation, cultural methods, and pasture practices are concerned not only with the immediate effects but with the cumulative effects in increasing, maintaining or decreasing the productivity of the soil.

Dry-land fruit and vegetable production. The work under this project consists of demonstrations of the feasibility of growing in this semi-arid region certain fruits and vegetables which can be produced on a home-garden scale, and of testing varieties suited to the region.

Cooperative shelter-belt demonstrations and experimental test plantings.

Under this project trees and ornamental plants that can be grown in dry regions are propagated and placed with experimenters for testing, and demonstrations of trees planted as shelter belts are developed and encouraged.

The dry lands naturally are treeless regions, but gratifying success has attended systematic effort to determine the kinds of trees and methods of care and culture necessary in their successful growth for shade and shelter.

(h) EXPERIMENTAL GREENHOUSE MAINTENANCE

Appropriation, 1932 \$ 98,120
 Appropriation, 1933 97,820
 Appropriation, 1934 87,190 (a)

Appropriation, 1935 75,061 (b)
 Budget Estimate, 1936 78,632
 Increase, Budget 1936, compared with
 Appropriation, 1935 3,571 (c)

(a) Includes \$2,190 transferred to Department of Interior.

(b) Includes \$3,822 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$1,663 transferred from Bureau of Animal Industry; and (2) \$2,159 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(c) Increase of \$3,571 compared with 1935 appropriation consists of -
 5% salary restoration, 1936 (to 100%) +\$3,810
 Reduction: Continuation of 1935 impoundment - 239
 + 3,571

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
Obligated:					
Experimental green-house maintenance....	\$71,724	\$74,822	\$78,632	(1) \$3,810	- - -
Unobligated:					
Salary reduction impoundments.....	3,600	- - -	- - -	- - -	- - -
Other legislative impoundments.....	930	239	- - -	- - -	- 239(2)
Other amounts unobligated.....	10,936	- - -	- - -	- - -	- - -
Total appropriation.....	87,190	75,061	78,632	+ 3,571	

The increase of \$3,571 for 1936 includes:

(1) An increase of \$3,810 for 5% salary restoration, 1936 (to 100%).

(2) A reduction of \$239, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General. A range of thirty-two greenhouses supplemented by a small adjacent outdoor area is maintained providing for experimental work with a wide range of plants. The greenhouses are operated to furnish necessary experimental facilities to the several other lines of subject matter investigations, particularly those dealing with the diseases of plants caused by bacteria, fungi, or nemas. Maintenance of experimental facilities for hybridization or other plant breeding and plant physiological studies also is provided.

(i) FORAGE CROPS AND DISEASES

Appropriation, 1932	\$ 279,375
Appropriation, 1933	257,005 (a)
Appropriation, 1934	201,014

Appropriation, 1935	183,505 (b)
Budget Estimate, 1936	<u>290,346</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>106,841 (c)</u>

(a) Excludes \$5,000 of \$262,005 in regular appropriation for 1933 which was transferred to "Drug and Related Plants."

(b) Includes \$8,909 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$3,875 transferred from Bureau of Animal Industry; and (2) \$5,034 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(c) Increase of \$106,841, compared with 1935 appropriation consists of -

5% salary restoration, 1935 (to 100%)	+\$8,360
Increase in working funds for 1936	+\$100,000
Decrease in working funds for 1936	-\$1,344
Reduction: Continuation of 1935 impoundment	-\$175
	<u>+106,841</u>

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Alfalfa investigations..	\$52,707	\$57,707	\$59,855	\$2,592	- \$ 444(2)
Clover investigations...	20,906	22,706	23,409	1,003	- 300(3)
Soybean cowpeas and velvet bean investigations.....	16,685	18,210	18,746	836	- 300(4)
Sorghum investigations..	6,358	6,958	7,292	334	- - -
Winter legumes and green manuring.....	31,567	34,367	35,823	1,756	- 300(5)
Grass, pastures and fine turf.....	39,845	43,382	145,221	1,839	+100,000(6)
Total obligations.....	168,068	183,330	290,346	(1) 8,360	98,656
<u>Unobligated:</u>					
Salary reduction impoundments.....	9,000	- - -	- - -	- - -	- - -
Other legislative impoundments.....	5,500	175	- - -	- - -	- 175(7)
Other amounts unobligated.....	18,446	- - -	- - -	- - -	- - -
Total appropriation.....	201,014	183,505	290,346	+ 106,841	

The increase of \$106,841 for 1936 includes:

- (1) An increase of \$8,360 for 5% salary restoration, 1936 (to 100%).

The following reductions in working funds due to transfer of cleaning work to Department of the Interior:

- | | |
|---|--------------|
| (2) Alfalfa Investigations. | \$ 444 |
| (3) Clover Investigations | 300 |
| (4) Soybean, Cowpea, and Velvet Bean Investigations | 300 |
| (5) Winter Legumes and Green Manuring | 300 |
| | <u>1,344</u> |

(6) An increase of \$100,000 in the project for "Grass, Pastures and Fine Turf." This increase is needed for problems associated with grass in both the humid and the semi-arid regions which are of the utmost importance in relation not only to the control of soil erosion but to the conservative utilization of land, in the light of crop adjustment, by grazing crops rather than by corn, grain or cotton. The problems vary in different regions of the United States, but in general they all derive their importance from the necessity of soil conservation and the decrease in the acreage in standard money crops. A more detailed knowledge than is now of record of our native grasses in the West and of the important grazing grasses in the humid regions of the East is necessary to form an underlying groundwork for wise utilization of this land.

In connection with this work it is necessary to make a pasture survey of the Eastern United States so as to record more exactly than is now the case the relation between soil, climate and the different grasses that will grow under those conditions.

Special work is also planned in southern Illinois, in association with the Bureau of Animal Industry and the Soil Erosion Service together with the Illinois Agricultural Experiment Station, and in Vermont looking to the most desirable method of establishing and maintaining pastures.

In the course of the work upon selection, breeding and physiology of grasses, heavier obligations than have heretofore been incurred for maintenance of greenhouses will have to be met. It is necessary therefore that additional appropriations be made for this purpose.

(7) A reduction of \$175, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General. The work under this appropriation covers studies in the production and improvement of plants used for hay or pasturage; the control of diseases of these crops; the most economical methods of utilizing forage crops and the introduction of new forage crops for especial regions and purposes. The work is done under six projects as follows:

Alfalfa investigations. Under this project three major lines of work are pursued: a study of varieties best suited to various sections; a study of cultural methods; and breeding for disease and cold resistance.

Information is needed as to value of varieties in different regions; cultural methods best suited to produce economical yields all to the end of making the production of alfalfa more secure and thus lend stability to agriculture. Breeding work is directed to the production of a variety resistant to bacterial wilt. This disease cuts the life of alfalfa from 10 to 3 years. The drought of 1934, which killed all the new seedlings of alfalfa from Nebraska to Ohio, emphasizes the importance of long-lived stands. Work already done shows that the establishment of a resistant variety is possible and the importance of the problem justifies many years' work.

Cooperation on varietal studies is maintained with 15 State stations; on cultural work with 8 stations and on disease studies and breeding with 4 State stations. One station not in cooperation with a state station has been maintained but is being abandoned.

Clover investigations. Work under this project concerns mainly red and sweet clovers.

Red clover is the standard hay crop of the Northeast. Certain strains far superior to the general run have been isolated and the perfection and establishment of these should make for a material decrease in losses now incurred by farmers through the use of unadapted seed. Sweet clover is without a rival as a dual purpose crop, for grazing and soil conservation. In the Great Plains area it is one of the best crops to prevent wind erosion. The importance of the crop for these purposes, especially in the West, justifies

a study of the varieties best adapted, the breeding of improved varieties and a study of the cultural methods by which sweet clover may be certainly established in the Great Plains area.

Cooperation is maintained with 14 State experiment stations, especially with the States of Ohio, North Carolina, Kentucky, Wisconsin, Iowa, Kansas, Texas, Colorado, Oregon and Idaho.

Soybean, cowpea and velvet bean investigations. Work under this project consists of the study and introduction of new varieties; selection and breeding for oil and protein and kindred matters.

There are more than 30 oil mills and food factories in the United States and these represent a large investment. The oil mills alone have a crushing capacity of 10,000,000 bushels annually and represent an industry for which agriculture can supply raw materials instead of growing grain, corn or cotton. Soybeans are very susceptible to soil and climatic influences and there is constant need for varieties that will be more profitable for oil production in the different sections of the United States. The introduction of such varieties will increase and stabilize the consumption of home-grown beans to the benefit of the farmer.

Cooperation in variety testing is maintained to a greater or less degree with nearly every State station but the funds are expended mainly in cooperation with 8 stations. The most important work is done in Virginia, North Carolina, South Carolina, Georgia, Ohio and Iowa.

Sorghum investigations. The work under this project is confined to the development and introduction of constantly better varieties and to a study of certain cultural problems.

From Texas to South Dakota, sorghum is the mainstay of the dry-land farmer. It is, in many places, the only summer crop he can grow and the relatively small effort expended in securing the best possible varieties is well worth while.

Cooperation is maintained chiefly with two stations, Kansas and Nebraska, though minor cooperation is maintained with four other State experiment stations.

Winter legumes, green manures and acid tolerant legumes. Work carried on under this project consists in a study of winter legumes, mainly vetches, with reference to their suitability for different regions; the effect on crop yields of turning under green manures and the introduction of crops such as Lespedeza and Crotalaria adapted to culture on acid soils and suitable for hay, grazing, or soil improvement. The greater portion of the funds expended under this project are devoted to a study of the acid tolerant crops just mentioned.

By far the greater part of the land south of the Ohio and Potomac Rivers and from the Atlantic Ocean to the Ozarks of Kansas and Oklahoma consists of acid soils. On these soils alfalfa and clover can not be grown without excessive liming and this cost makes it prohibitive. The need of finding crops that will grow on the lands, control soil erosion and furnish forage is imperative and the Bureau of Plant Industry has already introduced one

lespedeza so well suited to the conditions that in ten years the acreage has increased from nothing to an estimated seven million acres. The agriculture of the South needs to shift from cotton to livestock and to accomplish this, permanent legumes that can be grown with small expense and that can be depended on, are needed.

Cooperation is maintained with 12 State experiment stations, but more especially with Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida and Missouri.

Grass, pastures and fine turf. This project includes investigations of the development, improvement, and utilization of pastures; a determination of the adaptation of the various grasses to different soil and climatic conditions including tests of new importations; the breeding of improved varieties of grasses; studies of the effect of the association of grasses and legumes in mixtures especially under grazing conditions; and the use of grasses for fine turf on lawns; golf courses and other athletic fields; airports, parks and generally in landscape work.

About 40,000,000 acres are to be withdrawn from the production of cereal crops, cotton and tobacco and it is now recognized that other millions of acres in the semi-arid Great Plains should never have been plowed because of the inadequate and uncertain rainfall. Most of this should be seeded to grass or legumes. Unless active measures are taken to re-establish grass on these lands, the surface layers of productive soil will be lost by water or wind erosion or the field will be occupied by noxious weeds. Both types of erosion may be controlled and the presence of weeds avoided by obtaining a good cover of grass. This potential feed supply must, however, be utilized and the most profitable methods of using the grass can be developed only through actual pasture studies. The combined areas of grazing lands in the Great Plains and Inter-mountain States are probably in excess of 500,000,000 acres. A great deal of this land has been denuded by overgrazing or has been plowed for wheat and afterwards abandoned. There is no more effective method of conserving this land than by having it occupied by grasses.

Technical studies of the growth habits of important pasture plants, their morphological and physiological characters and the reasons for the failure of certain ones to produce viable seed are extremely important. Studies are needed upon the characteristics of the various grasses not only in the Great Plains and Intermountain States, but the grasses established in the humid part of the United States as well. Selections of types best suited to various environments and in the course of time breeding for special purposes will be required. Studies on seed production of certain kinds which are required in large amounts must be made and the seed of such species increased so that one or two million pounds per year may be available instead of between one and three hundred thousand pounds as is the case today. Much of the information derived from the study of pasture grasses in the humid region will also enable the Department to give more satisfactory advice in regard to grasses to be used for airports, sports fields, parks, and other places where fine turf is desirable.

Cooperation is maintained with 15 State Stations, though experimental quantities of seeds and plants are sent to many others. The most important work is done in the States of Vermont, Pennsylvania, Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida, Mississippi, Louisiana, Texas, West Virginia, Ohio and Michigan.

(j) FOREST PATHOLOGY

Appropriation, 1932 \$236,904 (a)
 Appropriation, 1933 234,936 (b)
 Appropriation, 1934 218,016 (c)

Appropriation, 1935 244,589 (d)
 Budget Estimate, 1936 252,092
 Increase, Budget 1936, compared with
 Appropriation, 1935 7,503 (e)

- (a) Includes \$223,572 in regular appropriation for 1932 and \$13,332 supplemental appropriation for 1932 carried in Second Deficiency Act, 1931-1932 for Dutch Elm Diseases.
- (b) Includes \$220,436 in regular appropriation for 1933 and \$17,500 transferred from Blister Rust Control, and excludes \$3,000 transferred to the Bureau of Entomology and Plant Quarantine.
- (c) Includes \$206,955 in regular appropriation for 1934 and \$14,061 transferred from Blister Rust Control, and excludes \$3,000 transferred to the Bureau of Entomology and Plant Quarantine.
- (d) Includes \$7,523 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$3,272 transferred from Bureau of Animal Industry; and (2) \$4,251 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.
- (e) Increase of \$7,505 compared with 1935 appropriation consists of -
 5% salary restoration, 1936 (to 100%) +\$ 8,903
 Decrease in working funds for 1936 - 1,200
 Reduction: Continuation of 1935 impoundment - 200
 + 7,503

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease 5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Tree Disease Emergencies (including Dutch Elm Disease research)	\$ 17,865	\$ 70,532	\$ 73,019	\$ 2,487	- - -
Diseases of shade trees, shrubs and chestnut orchards.....	49,000	51,116	51,716	1,800	- 1,200(2)
Diseases of forest trees and forest products.....	118,165	122,741	127,357	4,616	- - -
Total obligations.....	185,030	244,389	252,092	(1)8,903	- 1,200

Projects	1934	1935	1936	Increase or decrease	
		(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
<u>Unobligated:</u>					
Salary reduction im- poundments.....	6,600	- - -	- - -	- - -	- - -
Other legislative impoundments.....	2,300	200	- - -	- - -	- 200(3)
Other amounts unob- ligated.....	24,086	- - -	- - -	- - -	- - -
Total appropriation....	218,016	244,589	252,092	+ 7,503	

The increase of \$7,503 for 1936 includes:

(1) An increase of \$8,903 for 5% salary restoration, 1936 (to 100%).

(2) A decrease of \$1,200 in the project "Diseases of shade trees, shrubs and chestnut orchards." This decrease is a reduction in working funds due to transfer of cleaning work to the Department of Interior.

(3) A decrease of \$200, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General. Under this appropriation investigations are conducted on the diseases of forest trees, shade trees, and shrubs with particular reference to control methods; also studies on the decay and discoloration of logs, lumber, pulpwood, posts, and other forest products. The same organisms frequently cause diseases of both forest and shade trees, and some of the fungi found in structural timber also cause losses in standing trees. The National Government, in its Forest and Park services, directly controls large forest areas, hence these investigations are of direct service to the Government in the administration of its own properties in addition to their value to private wood producers and wood users. The State agricultural experiment stations are paying very little attention to forest and shade tree diseases. The extensive development in forestry during the present Administration, including such activities as the soil erosion work, enlargement of National forests in the East, the shelter belt planting in the Great Plains, State and Government civilian conservation camp work, and the Tennessee Valley development, have all placed increasing demands on the services of the pathologists of this Division.

Tree disease work in cooperation with the U.S. Forest Service and in some cases with State agencies is conducted at the following points; San Francisco, Calif.; New Haven, Conn.; New Orleans, La.; Albuquerque, N.M.; Portland, Ore.; Philadelphia, Pa.; and Madison, Wis. Work on the Dutch elm disease is conducted at the cooperative field stations at Morristown, N.J., and Wooster, O. The major portion of the shade tree work is centered at New Haven, Conn., though each of the other branch offices does some work on this general problem with particular reference to the surrounding region.

Tree disease emergencies. This project covers the investigation of diseases of forest and shade trees when they first appear in the United States.

Timely knowledge of the causal agents and their behavior and the discovery of control methods may at that time make possible the ridding of the country of these diseases before they become established. Like the Red Cross, the work must meet the emergencies when they arise. The Dutch elm disease, discovered in a small way four years ago in Ohio and more recently in Maryland, Virginia and Indiana, is now very serious around New York City, in New Jersey, New York, and Connecticut where thousands of affected trees have been found. It threatens the life of the American elm. The investigations made under this project furnish the foundation for the joint Federal and State eradication campaign now under way. The European larch canker infection found in Massachusetts is important to the larch forests of the Northern and Western States and its relation to the all-important Pacific Coast Douglas fir must be determined. The cause of control of a canker disease of pitch pines is being studied. It is apparently serious on the slash pine of the Southeastern States, so important in turpentine production and of promise for the paper industry. An apparently threatening twig blight of the ponderosa pine in Arizona and New Mexico is being evaluated in its relation to that important pine. Willow scab is rapidly spreading over New England and southwesterly through New York and Pennsylvania, and bears on the use of willows in erosion control. (Bureau of Entomology and Plant Quarantine cooperating).

Diseases of shade trees, shrubs, and chestnut orchards. Street, park, and ornamental trees make up a material part of the wealth of this country. Intangible values, such as reduction of temperature in a summer such as 1934, and the enhancement of the beauty of a place, are difficult to estimate. Losses of trees from diseases, unfavorable climatic factors, and decay of the heartwood with resulting breakage are taking place in every locality of the country. The primary objects of the work under this project is the prevention and reduction of these losses. Most of the diseases have never been investigated and others have been only partially studied. Improved methods of tree repair and better wound dressings are being studied. However, a large part of the funds in this project is required to determine the diseases and answer the correspondence sent in by the general public.

The increased number of visitors in our National and State parks have created new problems, particularly with reference to the packing of soil around the more valuable trees and diseased conditions resulting. Many invaluable sites have already been severely injured. These problems and various others dealing with park conditions are being studied in cooperation with the National Park Service and some of the State parks.

The incipient chestnut-orchard industry was wiped out by chestnut blight. Blight-resistant strains of chestnut introduced by this Bureau are being extensively tested as a basis for an orchard industry in the Eastern States. Among many thousands of seedlings those in which resistance to the blight and root diseases are combined with desirable horticultural qualities are being selected. Extensive breeding work to secure valuable hybrids is under way. As we normally import 20 to 25 million pounds of chestnuts from Europe, this is one agricultural industry that can be developed without danger of overproduction for many years. In the Western States the most planted chestnuts are blight-susceptible and efforts are being made to eradicate the few infections already found in that region.

Diseases of forest trees and forest products. Work under this project, carried on mainly at the experiment stations of the U.S. Forest Service, consists of investigations of the native diseases attacking forest nursery stock; plantations, and standing trees in the forest as well as the fungous discolorations and decays of logs, lumber, etc., and is part of the program authorized by the McNary-McSweeney Act. Research on the long-introduced diseases, chestnut blight and white-pine blister rust, is also included, forming a basis for the development of resistant forest chestnuts and for the local control of the rust.

The management of Government, State, and private forests on a profitable basis depends upon the prevention of loss from disease and decay. Because of the long life of forest trees, study of these diseases must be continuous over a period of years. A new method of approach to forest protection has been developed, which considers the effect of diseases on the stand and the timber yield as well as on the individual tree, and aims at preventing losses from native diseases through changes in the methods of forest management as well as by individual treatment. Investigation of fungous injury to forest products is under way, including a campaign against sap stain for which the southern lumbermen are furnishing part of the funds, and to meet the demands for information by other groups of wood producers and consumers. The improved control methods developed in this work have already come into large-scale use and are resulting in better lumber for the domestic consumer as well as aiding southern lumber to compete in the foreign market. Southwestern farmers have been aided in securing durable fence posts. A service of unique type has been rendered to forestry in the determination for several forest regions of the methods of logging slash disposal that favor most rapid decay and thus decrease of the fire hazard. (Forest Service, Bureau of Chemistry and Soils, and Bureau of Entomology and Plant Quarantine cooperating.)

(k) FRUIT AND VEGETABLE CROPS AND DISEASES

Appropriation, 1932	\$1,500,360
Appropriation, 1933	1,222,500 (a)
Appropriation, 1934	1,140,920 (b)

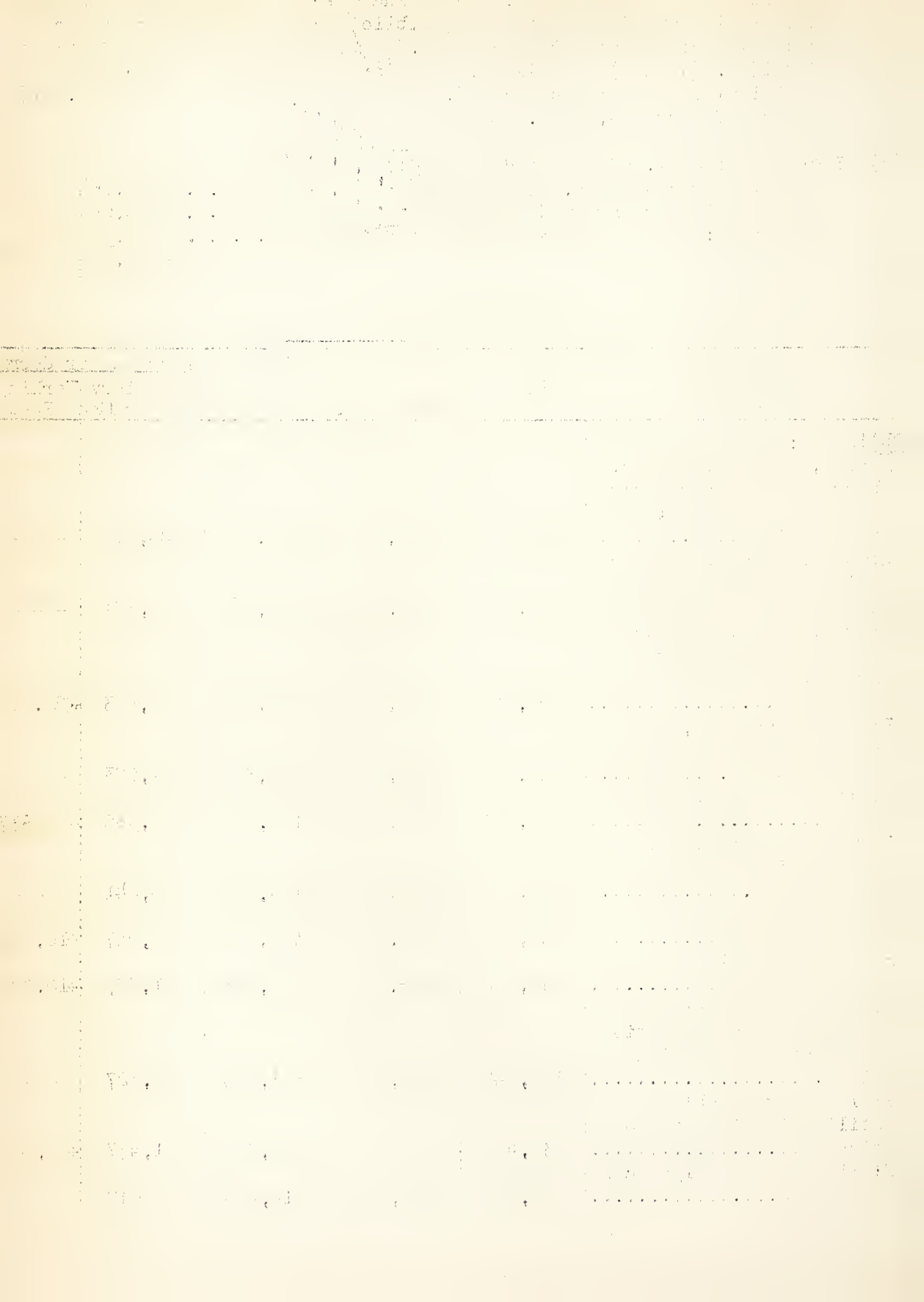
Appropriation, 1935	1,032,438 (c)
Budget Estimate, 1936	<u>1,163,692</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>131,254</u> (d)

- (a) Includes \$1,200,000 in regular appropriation for 1933, \$15,000 carried in the Agricultural Bill for 1933, being the unexpended balance of amount provided for 1932 for the establishment of a pecan station in the middle eastern Mississippi region, and \$7,500 transferred from Cereal Crops and Diseases.
- (b) Includes \$8,100 transferred from Sugar Plant Investigations for curly-top diseases of vegetables, and excludes \$11,280 transferred to Plant Exploration and Introduction for bibliographical studies on insecticide plants.

- (c) Includes \$8,180 transferred from Sugar Plant Investigations for curly-top diseases of vegetables, and excludes \$12,046 transferred to Plant Exploration and Introduction for bibliographical studies on insecticide plants; and also includes \$45,368 to cover 5% salary adjustment for 1935, (to 95%) as follows: (1) \$19,735 transferred from Bureau of Animal Industry; and (2) \$25,633 from fund authorized by Sec. 21(e) of Act of March 28, 1934.
- (d) Increase of \$131,254 compared with 1935 appropriation consists of --
- | | |
|---|-----------------|
| 5% salary restoration, 1936 (to 100%) | +\$44,254 |
| Increase in working funds for 1936 | + 89,063 |
| Reduction: Offset of 1935 vacancy impoundment | - 2,063 |
| | <u>+131,254</u> |

PROJECT STATEMENT

Projects	1934	1935	1936	Increase or decrease	
		(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Apples, peaches, grapes, berries and other decid- uous fruit production in- vestigations.....	\$131,188	\$140,276	\$146,254	\$5,978	- - -
Almonds, pecans, walnuts, filberts and other nut production investigations	85,052	90,287	94,168	3,881	- - -
Citrus, dates, avocado and other subtropical fruit production inves- tigations.....	69,242	73,303	86,966	3,663	+10,000(2)
Plant propagation, nursery management and stock storage.....	17,707	23,808	24,831	1,023	- - -
Fruit disease investiga- tions.....	139,401	148,346	153,789	6,380	- 937(3)
Vegetable production, standardization and improvement.....	89,509	99,223	103,464	4,241	- - -
Vegetable disease investigations.....	92,488	92,227	106,174	3,947	+10,000(4)
Potato production investigations.....	36,972	51,204	63,031	1,827	+10,000(5)
Fruit and vegetable handling, transportation and storage investiga- tions.....	150,542	154,652	161,279	6,627	- - -
Fruit and vegetable utilization investiga- tions.....	30,428	35,243	96,700	1,457	+60,000(6)
Floriculture and landscape gardening.....	9,279	11,892	12,404	512	- - -



Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease 5% Salary Working Restoration Funds	
Bulb investigations.....	21,947	22,884	23,867	983	- - -
Diseases of florists' stocks, shrubs and other ornamental plants.....	20,596	21,947	22,889	942	- - -
Cheyenne horticultural field station.....	63,134	65,083	67,876	2,793	- - -
Total obligations.....	957,485	1,030,375	1,163,692	(1)44,254	+ 89,063
Unobligated:					
Salary reduction im- poundments	43,500	- - -	- - -	- - -	- - -
Other legislative im- poundments.....	20,000	2,063	- - -	- - -	- 2,063(7)
Other amounts unobli- gated.....	119,935	- - -	- - -	- - -	- - -
Total appropriation.....	1,140,920	1,032,438	1,163,692		+131,254

The increase of \$131,254 for 1936 includes:

(1) An increase of \$44,254 for 5% salary restoration in 1936 (to 100%).

(2) An increase of \$10,000 in the project for "Citrus, Dates, Avocados and Other Subtropical Fruit Production Investigations". This increase is needed to permit extending subtropical-fruit tests to a degree that should help to prevent serious danger of loss of breeding stocks. The Department has introduced many species of subtropical-fruit plants having valuable characters of resistance to relatively low temperatures, humidity, and disease resistance. Some hybridization with desirable commercial varieties in a few species has been done and promising seedlings have been developed, but under present conditions it is impossible to test adequately the many stocks on hand. Because of differences in soil and climate, promising material should be tested throughout all of the Gulf States, Arizona, New Mexico and California.

(3) A net decrease of \$937 in the project "Fruit Disease Investigations". Consists of \$3,000 transferred to Interior Department to cover cleaning service, and an apparent increase of \$2,063 offsetting vacancy impoundments, 1935 (See reduction explained in note 7).

(4) An increase of \$10,000 in the project for "Vegetable Disease Investigations". This increase is needed for lettuce breeding investigations. The Department has bred improved varieties of lettuce that are resistant to some diseases and thereby saved the lettuce-growing industry in part of the Imperial Valley from complete destruction. Other diseases exist in the area, however, that have not been successfully combated and it is important that disease resistance be transferred to types of lettuce required to meet different market demands and that are adapted to other lettuce-growing regions in the United States. Carrying on this work at present is possible only because of the contributions made in land, labor, and money by certain individuals and groups of individuals to supplement the very limited Department funds

available. Under these conditions, the many pressing problems can not be adequately studied and work upon certain phases of the problems is restricted.

(5) An increase of \$10,000 in the project for "Potato Production Investigations". This increase is needed to prosecute potato breeding work at a minimum level of efficiency and with reasonable safety against the loss of valuable material. In its potato breeding program, the Department has introduced wild species having valuable characters of disease resistance and some of these have been hybridized with the better commercial varieties in an attempt to produce desirable, resistant sorts. Promising indications have been obtained, but the probability of success is jeopardized by the inability to test adequately the many stocks on hand. Because of the importance of environment this work is being conducted in 15 States, in cooperation with State stations.

(6) An increase of \$60,000 in the project for "Fruit and Vegetable Utilization Investigations". This increase is needed for the maintenance and operation of fruit products work established at Meridian, Mississippi and Beltsville, Maryland, 1935, under P.W.A. funds and for which no allowance of emergency funds is provided for 1936.

A. Beltsville, Maryland..... \$43,000

\$566,352 was allotted in 1935 from P.W.A. funds for a fruit and vegetable experiment farm near Beltsville, Maryland, including the purchase of land previously leased, and construction of necessary laboratories, etc. Of this, \$159,500 was allotted for a fruit products laboratory in which to study all phases of fruit utilization, including fermented and unfermented fruit juices. For the reasonably efficient operation and utilization of this fruit products laboratory, including personnel, \$43,000 over and above the present appropriation is required.

Great losses in the manufacture of fruit juices will occur in this country unless accurate information covering the production of such juices is obtained. Widespread interest has developed in the manufacture of high-quality fermented fruit beverages from grapes and other fruits and the Department is being besieged with inquiries from interested individuals and commercial concerns for information on this subject. Both extensive and intensive investigations are required to make it possible for the Department to meet these requests. Special interest is being shown in the development of new horticultural manufactures of high quality, and more specific information relative to the efficient and economical utilization of fruits and other horticultural products through the use of low temperatures, heat, dehydration and other agencies, is urgently needed.

B. Meridian, Mississippi..... \$17,000

\$78,850 was allotted in 1935 from P.W.A. funds for the establishment of a fruit products laboratory, including cold storage, experimental greenhouses and supplementary buildings, etc., on the Government farm at Meridian, Mississippi. For the reasonably efficient operation and utilization of these facilities \$17,000 over and above the present appropriation is required.

Because of the hot, humid weather under which many of the fruit crops are produced in the South, heavy losses often occur in shipping the fresh product to northern markets. These losses can be prevented to a great extent and the industry made more profitable if satisfactory fruit juices and certain by-products can be successfully manufactured. If certain products can be held in cold storage for a few weeks, market conditions would become improved and better financial returns received. Such cold storage investigations might thus prove to be of extreme value to the growers of southern fruit and vegetable crops. Many requests covering questions as to the possible value of the use of greenhouses in southern horticulture are being received from interested individuals and commercial concerns. Very little information based upon careful research in the South is available on any of these subjects.

(7) A decrease of \$2,063 offsetting vacancy impoundments, 1935. This decrease is an offset for a corresponding increase estimated for obligation in 1936 under the project "Fruit Disease Investigations" (see note 3).

WORK DONE UNDER THIS APPROPRIATION

Under this appropriation investigations are conducted to determine the best methods of culture, propagation, breeding, selection, disease control, and related activities as affecting the most profitable production of high quality orchard fruits, small fruits, nuts, vegetables, ornamentals, nursery stocks and related plants. The interrelation of various orchard management practices and problems concerned with the nutrition and physiology of the various horticultural plants are studied. Investigations for determining the best methods of harvesting, packing, shipping, storing and utilizing horticultural products are also conducted, including the physiological and related changes of perishables during marketing and storage. In addition to cooperative activities with the State agricultural experiment stations, other Bureaus of the Department of Agriculture and the Bureau of Indian Affairs of the Department of the Interior, field stations, laboratories, and offices are maintained at the following points:

Field Stations (Government-Owned Land)

Bellingham, Washington	Cheyenne, Wyoming	Meridian, Mississippi
Beltsville, Maryland	Fresno, California	Oakville, California
Brownwood, Texas	Indio, California	Robson, Louisiana

Cooperative Field Stations (Land furnished)

Austin, Texas	Florence, S.C.	Greeley, Colorado
Eustis, Florida	Fort Valley, Ga.	Palo Alto, California
Medford, Oregon	Willard, N.C.	Hancock, Maryland

Field Laboratories

Albany, Georgia	Fayetteville, Ark.	Seattle, Washington
Chadbourn, N.C.	Hood River, Oregon	Shreveport, Louisiana
Charleston, S.C.	Los Angeles, Calif.	Springfield, Mo.
Chicago, Illinois	New York, N.Y.	Spring Hill, Alabama
Chula Vista, Calif.	Orlando, Florida	Vincennes, Indiana
Corvallis, Oregon	Pemberton, N.J.	Wenatchee, Washington
East Wareham, Mass.	Pomona, Calif.	Yakima, Washington

Field Offices

Riverside, California

Sacramento, California

Apples, peaches, grapes, berries and other deciduous fruit production investigations. The influence of pruning, fruit thinning, soil improvement crops, fertilizers, and other orchard management practices on yield, regularity of crops and quality of fruit is studied; also the functioning of fruit trees under varying soil moisture conditions. Cultural methods for strawberries, including effects of different plant nutrients on production, firmness and quality of the fruit are under investigation. Best root stocks and varieties for grapes in the Southeast and in the vinifera grape regions, especially in California, are being determined. Through fruit breeding and bud selection studies with apples, pears, peaches, plums, grapes, strawberries and other small fruits, improved varieties of high quality and disease resistance are being developed.

These investigations are designed to determine methods of reducing the cost of production and at the same time to cause a more uniform and stable production of high quality fruit.

Immense investments are represented by the apple and other deciduous fruit industries. The production of apples varies from around 140,000,000 to more than 200,000,000 bushels annually, with a valuation ranging from about \$100,000,000 to nearly \$178,000,000 depending on crop and market conditions; the annual valuation of the peach crop formerly averaged around \$60,000,000 though in recent years the average has been only about half that amount. The grape crop in recent years has had an average annual value of some \$30,000,000; in former years the average was from two to three times as great. The strawberry crop in normal years has a farm value of \$35,000,000 to \$38,000,000. The farm value of the other deciduous fruits adds many more millions of dollars to the total. One of the most serious handicaps to the farmer of fruit production is the wide fluctuation from year to year in size of the crop and its cash return. The orchard management studies are projected with a view to inducing regular annual crops of high quality. Specific methods, often quite different, must be developed because of the different regional conditions under which fruit is grown. Most fruit varieties in cultivation originated as chance seedlings; many of them are faulty in various ways. Fruit breeding is conducted to develop disease resistant varieties having better eating quality; varieties better adapted to various local conditions and having superior merit for shipping, storing, canning, drying or preservation by other methods. The bud selection work accomplishes similar results by taking advantage of bud mutations as they occur in nature. These lines of investigation are for the purpose of aiding fruit growers in the solution of problems which seriously reduce net income, and which as individuals they are not in a position to solve.

Almonds, pecans, walnuts, filberts and other nut production investigations. The work varies widely with the kind of nut and region where grown. Merits of almond varieties are determined and improved varieties are being developed by breeding. Cultural requirements of the pecan to induce regular annual crops of well filled nuts are being investigated. Habits of blossoming and pollination requirements of Persian walnut varieties as influencing yields are determined. Those conditions most favorable to growth and produc-

tion of filberts are being determined. Merits, range of adaptability, and possibilities of black walnuts, various hickories, chestnuts, hazels and other nuts are studied. The breeding and selection of improved varieties of filberts, walnuts and other nuts are in progress.

The average production of almonds in California for 1931-33 was 13,900 tons, average value \$2,400,000; Persian walnuts 37,000 tons, average value nearly \$7,800,000; value of filberts in Oregon for the same years ranged from \$85,000 to \$300,000 a year. Pecans, representing the one native nut of primary importance averaged a yield of about 64,000,000 pounds for the years 1931-33, with a range in valuation of from nearly \$3,000,000 to more than \$6,000,000 per year. The value of nuts for food purposes is generally recognized. Serious production problems exist with each crop. Many almond varieties of inferior value have greatly handicapped merchandizing the crop. Varietal studies have helped to determine those to discard. The need of improved varieties has been carefully met in breeding work that is in progress. The pecan is a native nut only comparatively recently brought into cultivation in orchard form; cultural requirements are largely unknown; irregular and small crops of poorly filled nuts are disastrously frequent. Cultural methods that will overcome these difficulties must be determined if the pecan industry is to succeed. Many Persian walnut orchards have habitually been unproductive. The determination of cross-pollination requirements of the varieties has shown that such orchards may be made more productive and profitable when suitable cross-pollination is provided. Widespread interest prevails in the various hickories, black walnuts, butternuts, hazels and other nuts suitable for growing in Northeastern United States. Collections are being made throughout the country of as many desirable wild seedlings as can be found and these should be grown under uniform conditions to determine the value from the standpoint of quick growth, disease resistance and uniform yields of high quality nuts.

Citrus, dates, avocados and other subtropical fruit production investigations. Efforts are being made through breeding and bud selection methods, to develop improved citrus varieties, strains and types resistant to disease, capable of producing more regular and more profitable crops and which will extend the usefulness of citrus for other purposes and in other regions. More satisfactory under-stocks are being sought and the effects of pruning, soil management, fertilization and leaf area on the yield, texture, storage and shipping quality are being determined. Especial attention is being given to all production problems concerned in growing Satsuma oranges in the Gulf States. Variety studies, pollination, pruning and soil management requirements, breeding and propagation investigations and those factors affecting quality are being conducted with dates, avocados, mangoes, figs and other subtropical fruits.

For the years 1931-33, the average farm value of citrus fruits was about \$87,000,000. The corresponding figure for the former years of 1928-29 was \$162,300,000. The average annual production of avocados for the 5-year period 1928 to 1932 was 2,156 tons having an average farm value of \$518,000. The date crop amounts to about 5,500,000 pounds annually, and is increasing. Similar figures for the mango and other subtropical fruits are not available. Certain of these fruits, such as the date can be grown successfully in many of the hot interior valleys of the Southwest and will furnish a profitable crop for such regions if their cultural requirements can be determined.

Avocados and citrus fruits furnish profitable crops for many of the Western and Southern States.

Plant propagation, nursery management and stock storage. Selecting and determining the merits, both from the nurseryman's and the fruit grower's point of view, of different under-stock for use in propagating apple, pear, peach, plum and cherry trees are being investigated. Suitable vigorous and disease resistant stocks for outdoor hybrid tea roses and for use in propagating rose plants for greenhouse forcing are being studied. Studies are being made of the propagation of other ornamentals, including also the propagation of fruit and rose stocks from seed, and by grafting, layering and cuttings. Experiments in the proper storage of nursery stock to determine optimum moisture and temperature conditions for best results are being made.

Nursery sales during 1929, according to the 1930 Census Report, involved approximately 186,000,000 trees, shrubs, and other plants (excluding strawberry and other berry plants). As of April 1, 1930, the nurserymen had growing for further development and future sales nearly 490,000,000 of the same items. The value of the sales in 1929 amounted to about \$95,000,000. Relatively little research work for the benefit of the nursery industry has been done in this country. Many of the problems concerning suitable under-stocks, methods of propagation and the winter storage of nursery stock remain unsolved. An understock may lack hardiness, or congeniality with the variety grafted on it, or it may lack insect or disease resistance or adaptability to soil conditions, or in other ways it may lack qualities necessary to make it of permanent value to the planter. Great losses to both nurserymen and fruit growers have occurred in the past from the use of unsuitable stocks. More rapid, less tedious and less costly methods of propagating certain kinds of stocks are needed. Heavy losses from the destructive effects of improper storage conditions during winter are often suffered. Research on storage conditions for optimum results should save many thousands of dollars in such losses.

Fruit disease investigations. Destructive fungous, bacterial, virus, and physiological diseases of all the more important kinds of fruits and nuts are studied for the purpose of determining their life histories, methods of dissemination, means of infection and methods of control, whether spraying, disinfection, fumigation, eradication or other means. Efforts are made to develop new sprays superior to those now generally in use in effectiveness and in freedom from causing injury to host plants. Work is in progress on diseases affecting the apple, pear, peach, apricot, plum, prune, grape, strawberry, raspberry, cranberry, blueberry, orange, grapefruit, avocado, mango, pecan, Persian walnut and filbert.

Losses due to the more prevalent fruit diseases have been estimated to amount annually to about \$50,000,000; similar losses from pecan, Persian walnuts, and filberts add nearly \$2,500,000 to the total. A large proportion of these losses should unquestionably be preventable by the proper use of suitable control measures. Disastrously large proportions of fruit crops are frequently lost by growers, their income being reduced proportionately. The use of suitable control methods would largely prevent such disasters and aid greatly in stabilizing yearly production - a factor of basic importance to the grower and consumer alike, and to the fruit industry generally. The objectives of the work are directed to these ends.

Vegetable production, standardization and improvement. These activities include studies of improved methods of handling seed, production of plants in plant beds and establishing field plantings; studies of the adaptability of specific crops and varieties to different regions as affected by water supply, temperature, and other meteorological factors; the causes and control of numerous non-parasitic diseases or abnormal growth and development troubles of vegetable crops; the factors determining high culinary and market quality in vegetable products and methods of their control; the breeding and selection of disease-resistant vegetable varieties of improved culinary and market quality to meet specific market, shipping or manufacturing requirements; the establishment of nationally applicable standards and descriptions of commercially important varieties.

According to the 1930 Census and data of the Department of Agriculture, the total farm value of the crops receiving consideration in this project was about \$800,000,000 in 1929. On account of recent low prices in the past few years the total value of these crops is now far less, probably no more than a half billion dollars, despite the fact that production of these commodities has not greatly decreased. Recent increases in cost of many items entering into vegetable production have further lessened the opportunity of vegetable growers to realize a profit and in many cases to even meet costs of production. The employment of every possible improvement in crop production technic is imperative if millions of growers are to be even moderately successful. The investigations under way are designed to remove as many hazards of production as possible in order to permit the grower to more accurately estimate planting requirements and production. Adaptation studies permit more accurate recommendations as to varieties in different regions thereby avoiding loss to growers who might attempt to grow varieties not suitable to their conditions but eminently successful elsewhere. Some abnormalities have been corrected in various crops, but many require study. The salvation of the Southeastern tomato industry by the development of disease-resistant varieties is an example of what can be done by breeding. Additional and increasingly severe diseases in many crops demand intensive breeding work as the best if not the only practicable method of avoiding destruction by disease. Disease-resistant tomatoes, peas, beans, cucumbers, and lettuce are in course of development. Other methods of disease control must be developed pending new varieties. The recent publication of accurate and nationally dependable standards for varieties of tomatoes, cabbage and peas, has already resulted in improvement in seed stocks available for sale. Additional crops must be similarly studied.

Vegetable disease investigations. Fungous, virus and bacterial diseases of all the more important vegetable crops are studied to determine life histories, means of dissemination methods of infection, and means of control or prevention. In many cases the breeding of varieties resistant to destructive diseases is in progress.. Special breeding or selection investigations for disease resistance are being conducted with lettuce, muskmelon and peas in California; celery in Florida; tomatoes in Florida, Utah and California; peas and beans in Colorado, Washington, Idaho and Oregon; cabbage in Wisconsin; potatoes in Maine, Minnesota, Michigan, Iowa, North Dakota, Louisiana, Maryland and other States and sweet potatoes in Mississippi, Virginia and Maryland.

Losses from disease in the more important vegetables other than potatoes are estimated to amount to something like \$84,000,000 annually. The estimated loss from potato disease alone is about \$45,000,000 making a total estimated

annual loss from diseases of \$129,000,000. Much of this loss could be prevented if new spray materials and spraying methods could be developed. If disease resistant varieties of high quality could be developed by breeding, great savings would result. Vegetable disease control is basic to stabilized production. It is to these ends that the research on vegetable diseases is prosecuted.

Potato production investigations. The investigations fall mainly into two groups: Breeding and selection to develop new varieties that possess superior table quality, better adaptability to diverse soil, climatic and other conditions, resistance to disease; and cultural methods, including storing and handling of seed stocks to obtain optimum results. Breeding and selection work is carried on cooperatively in important potato producing States - Maine, Virginia, Maryland, North Carolina, New York, Michigan, Iowa, Minnesota and others. Cultural investigations are conducted to determine the most profitable quantity of seed to use; time of cutting seed, and manner of handling thereafter; best methods of planting; the most efficient use of fertilizers; amount of irrigation necessary in different regions, and the effect on results of storing seed stocks at different temperatures and humidities.

The average farm value of the potato crop for the past five years has been about \$266,000,000. In some years the value is as much as \$477,000,000. The potato crop is vastly important to the farmer; it is the most important vegetable crop to the consumer based on volume used. Though extensive commercial production is restricted to perhaps a dozen States the potato is the most universally grown of all vegetable crops. Problems of production are as varied as the diverse conditions under which the crop is grown. Low yields per unit of land prevail generally. Stabilization of production through greatly increased yields per unit of land, thus reducing acreage and lessening costs of production; better handling of seed stocks; and the development of varieties of superior quality and resistant to disease are some of the principal means of bettering the potato industry and particularly the producer.

Fruit and vegetable handling, transportation and storage investigations. Investigations are conducted to determine the proper maturity of fruit and vegetable crops for various trade outlets and to develop more economical and efficient methods of handling, packing, shipping and storing the crops after they are grown and are in the process of marketing. Experiments are conducted to determine the most effective methods of cooling and refrigerating fruits and vegetables in transit; best methods of car heating to prevent freezing while in transit during extremely cold weather; methods of controlling diseases in transit, storage and while on the market of fruits and vegetables; also the effect of ethylene and other gases in degreening fruits. Methods of removing spray residues are investigated as are methods of preserving fruits and vegetables by freezing. Storage conditions, especially relating to temperature, humidity and duration of storage period and ripening conditions after removal that produce optimum results for canning, fresh fruit utilization or for other purposes, have been studied to the end that quality of some products not previously supposed to be inherently possible for the type of fruit used have been obtained. Various other problems relating to handling, transporting and storing perishable products are receiving attention.

Vast losses of fruits and vegetables occur in transit, storage and on the market, as a result of disease, freezing in transit, or other conditions adverse to the product. Investigations that include the history and condition of the fruit when shipped or stored, the temperature and other conditions during transit by rail, boat or other means, and during storage and marketing periods are essential to get at the facts needed in correlating cause and effect. The removal of spray residues necessary to bring them within legal requirements of tolerance has presented complicated problems that are entirely beyond the facilities and ability of growers and shippers to solve for themselves. Preservation of fruits and vegetables by freezing is recognized as a valuable method of preservation, but it presents many problems that require scientific research from physiological and other standpoints - effect of rate of freezing and temperature on quality, type of container, suitability of different varieties, wholesomeness of the product, and many others of like character. The use of ethylene and other gases in treating citrus fruits for the purpose of eliminating the green color in fruit that is commercially mature requires research to determine limits of usefulness of the process, methods of application, effect on the fruit, and other like factors so that the growers, shippers and the industry generally can take full advantage of its beneficial possibilities. The working out of storage and ripening details in handling Kieffer and other pears of the same type that result in a greatly improved quality of fruit for canning and other purposes should add very materially to the value of a type of fruit grown extensively and widely, and which heretofore has had a relatively small value in part because of its poor eating quality. These and other lines of investigation have aided, and are continuing to aid very greatly in the handling of perishable products.

Fruit and vegetable utilization investigations. The work includes research relating to the fundamental factors involved in the preservation of fruits and vegetables by canning, drying and freezing, the relation of varietal characters and stage of maturity to the appearance, palatability and food value of the products; also of basic importance are the studies of the microbiological problems arising in connection with spoilage in canned products, and more especially in the newer field of preservation of fruits and vegetables by freezing. All studies on the utilization of fruits and vegetables so far as it concerns the eating quality and character of the preserved product are based on the adaptability of different varieties to the particular method of preservation in question. Studies in determining the best methods of manufacturing unfermented and fermented fruit juices are receiving especial attention.

The best figures available give the aggregate value of "canned and processed vegetables and fruits, and pickles, preserves, jams, jellies and sauces, all industries," for 1929 as \$721,845,902. The corresponding figure for 1931 is \$481,416,068, a season of comparatively light packs, showing that the quantity of fruit and vegetable products preserved by canning, freezing, and in other ways is impressive. Heavy losses due to spoilage have been experienced in the past. The basic factors determined in this research work have made possible considerable savings in this particular. The improvement in appearance, palatability, and food value resulting from better methods of preservation have materially widened markets and increased consumer demand. The frozen pack process of preservation presents many problems, including microbiological factors of unknown relation to the food values and wholesome-

ness of the products. Many new problems are arising from the application of this new method of preservation to a wide variety of fruits and vegetables and the successful solution of these problems will require thorough investigations. Many problems in connection with the manufacture of fermented and unfermented fruit juices so that a distinctive home product may be developed remain unsolved.

Floriculture and landscape gardening. Investigations are made to determine the value of different varieties of various groups of ornamental plants including annuals, herbaceous perennials, roses and other hardy plants and trees to determine their suitability for different uses and their adaptability to different climatic and other conditions. The arrangement of plant material for ornamenting home grounds and public buildings is studied; the selection and use of plants and trees for park, and roadside planting, and for farm homestead improvement are receiving attention.

The 1930 Census Report shows that in 1929 nursery sales included about 110,000,000 specimens of ornamental trees, shrubs and other similar plants (not counting in annuals, bulbs and herbaceous plants). On April 1, 1930, there were growing in the nurseries of the United States, for further development and future sale about 340,000,000 specimens of the same items. The sales of florists stocks, roses, carnations and the like, grown in greenhouses and in the open during 1929 amounted to more than \$98,000,000. The study of this type of material to determine varietal merit and effectiveness and adaptability to different conditions and uses is necessary in order to supply information constantly and increasingly in demand by the public; also to determine best methods of culture including pruning, fertilizing and general care. The development by selection of improved varieties, particularly of hardy chrysanthemums, to provide early and desirable flowering types for regions where the growing season is comparatively short is yielding results of large potential importance.

Bulb investigations. Experiments with tulips, hyacinths, daffodils, lilies and other bulbous flowering plants are conducted. The work includes a study of cultural methods, effects of different storage conditions and handling methods on subsequent growth and flowering, the object being to regulate at will time of flowering by appropriate treatment. Breeding and selection to develop improved types and varieties, and the development of information regarding various new or little known bulbous flowering species and types that possess potential commercial value are important phases of these investigations.

In a large measure the object of bulb culture investigations is the establishment in suitable regions of an American bulb production industry in place of importing the supply used by American planters and greenhouse men. This is true particularly of the commonly designated "Dutch Bulbs". In 1929 there were imported into this country 235,000,000 to 250,000,000 bulbs including hyacinths, tulips, daffodils, crocus, lily and other commonly grown stocks. The value was nearly \$7,000,000. In 1932 the importation of the same items was 140,000,000 to 150,000,000 bulbs, with a value of about \$2,260,000. Many American growers, largely as a result of these investigations, are now producing supplies of bulbs formerly imported. The importation of certain stocks is now prohibited because of quarantine regulations.

and the economic situation in the country. The government has been working to improve the situation and has been successful in many areas. The economy is growing and the people are becoming more prosperous. The government is also working to improve the social services and the health care system. The country is becoming more stable and the people are more confident in the future.

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In these investigations methods are being developed that greatly simplify cultural practices and reduce cost of production. By use of special methods of storing and handling, practices are being originated so that florists may secure blossoms of iris and daffodils several weeks in advance of the usual time of blooming, and at periods when good demand for them can readily be developed. This greatly extends the "forcing season" for these items, and at little or no added expense to the growers. More than 100 lily progenies from breeding work are being developed; several lily hybrid selections of much promise and representing new types have been brought to the stage of introduction. These and other investigations of great potential promise to the industries are in progress.

Diseases of florists' stocks, shrubs and other ornamental plants.

Investigations are in progress on fungous, bacterial, virus and physiological diseases of floral crops, shrubs and other plants grown for ornamental purposes including roses, daffodils, gladiolus, azaleas and a wide range of other plants. Special studies designed to save the valuable old boxwood plantings and the magnolia and azalea gardens of the South are in progress. Diseases affecting the newly established bulb industries in the Northwest, Southeast and Northeast are receiving special attention.

With the expanding interest in recent years in the growing of ornamental plants, disease problems began to multiply with corresponding demands made of the Department for help. Because of the universal interest in and extensive planting of roses and the seriousness of certain diseases, particular attention has been directed to them with a view to finding effective and practicable means of control. A similar situation prevails with respect to bulbs, lilies and ornamental plantings. The work is directed to particular disease troubles that cause serious loss to the producers of particular kinds of florists' and ornamental stocks as well as to the purchasers and planters. There are no complete figures available on the loss due to diseases of ornamental plants. An estimate has been made of \$2,500,000 annually due to diseases of greenhouses roses alone. The continuance of certain famous azalea gardens and boxwood plantings in the South is apparently contingent on the development of a satisfactory means of controlling very serious diseases that have recently attacked them.

Cheyenne horticultural field station. Experiments are conducted to determine the best methods of growing successfully fruits, vegetables, flowers, ornamentals and shelter-belt plants both under dry and irrigated land conditions in the Great Plains area. Varieties of the different horticultural crops best suited to the climatic and soil conditions of this region are determined. Soil management, fertilizers and various cultural practices are studied in relation to crop production. Breeding investigations to develop fruit and vegetable varieties resistant to disease and drought and low temperature are conducted. Investigations relative to the best species of trees to use for shelter-belts and studies relative to the best methods of planting and tree arrangement from the standpoint of checking wind velocity and snows and the relation of the shelter-belt to the prevention of soil blowing and the retention of moisture are made.

This station serves a vast area of the Great Plains country, in which are located a great many ranchers and farmers who are endeavoring to select and grow successfully various cash crops. Such studies should help

determine the best varieties and the best methods of culture for most successful plant growth and production and at the same time the development of hardiness to withstand low temperatures. The best selection and proper arrangement of trees for shelter-belt planting should result in a more profitable agriculture and better and more pleasant surroundings in which to live. Although living conditions in this Great Plains area should be made much more pleasant, the improvement in the production methods of crops for this region should result in greatly increased financial returns to the owners.

(1) GENETICS AND BIOPHYSICS

Appropriation, 1932 \$ 36,420
 Appropriation, 1933 36,220
 Appropriation, 1934 33,617

Appropriation, 1935 30,225 (a)
 Budget Estimate, 1936 31,675
 Increase, Budget 1936, compared with
 Appropriation, 1935 1,450 (b)

(a) Includes \$1,472 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$640 transferred from Bureau of Animal Industry; and (2) \$832 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(b) Increase of \$1,450 compared with 1935 appropriation represents 5% salary restoration, 1936 (to 100%).

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Genetics and Biophysics	\$27,831	\$30,225	\$31,675	(1) \$1,450	- - -
<u>Unobligated:</u>					
Salary reduction im- poundments.....	1,300	- - -	- - -	- - -	- - -
Other amounts unob- ligated.....	4,486	- - -	- - -	- - -	- - -
Total appropriation....	33,617	30,225	31,675	+ 1,450	

(1) The increase of \$1,450 for 1936 is for 5% salary restoration (to 100%).

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WORK DONE UNDER THIS APPROPRIATION

General. The general objective of this Division is to increase our knowledge of the way plants grow and reproduce. The method of attack is to investigate the mechanism of inheritance by which characters are transmitted from one generation to the next with the idea of giving direction to the improvement of plants by combining existing characters; to explore the possibilities of inducing new characters by various kinds of radiation, such as x-ray, heat and light; and to investigate the possibility of influencing the growth of plants by changing the physical nature of the environment such as electric currents, light of particular wave length or colors, etc.

Some of the problems under immediate investigation are: A detailed study of the chromosomes of maize and related plants. These minute bodies are known to be the vehicles for transmitting characters from parent to offspring. This work has progressed to a point where particular chromosomes bearing known characters can be identified under the microscope and correlated with the plant behavior in the field. This investigation requires field plantings of maize and maize relatives, and cytological laboratory work.

The effect of light of different wave lengths on the germination of seeds is being studied in cooperation with the Seed Laboratory. Certain seeds have been found that will not germinate without exposure to red or yellow light, while blue light prevents germination. Surprisingly short exposures have been found effective. The possibility of increasing plant growth by screening out deleterious wave lengths is indicated.

The requirements for these investigations in addition to a trained personnel are laboratory equipment of lenses, prisms, temperature control chambers, etc.

The maintenance of a living collection of primitive varieties of maize grown by the American Indians represents what is left of the stocks from which all existing varieties of maize have been developed. To maintain these varieties for the future use of corn breeders requires field plantings and hand pollination to maintain the purity of the strains.

(m) MYCOLOGY AND DISEASE SURVEY

Appropriation, 1932	\$ 59,960
Appropriation, 1933	50,000
Appropriation, 1934	46,133
<hr/>	
Appropriation, 1935	41,362 (a)
Budget Estimate, 1936	<u>42,818</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>1,456 (b)</u>

- (a) Includes \$2,020 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$879 transferred from Bureau of Animal Industry, and (2) \$1,141 from fund authorized by Sec.21(e) of Act of March 28, 1934.

- (b) Increase of \$1,456 compared with 1935 appropriation consists of -
 5% salary restoration, 1936 (to 100%) +\$2,121
 Reduction: Continuation of 1935 impoundment - 665
 + 1,456

PROJECT STATEMENT

Projects	1934	1935	1936	Increase or decrease	
		(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
Obligated:					
Mycology	\$14,918	\$15,215	\$16,029	\$ 814	- - -
Plant Disease Survey..	19,423	21,221	22,263	1,042	- - -
Mushroom investigations	3,347	4,261	4,526	265	- - -
Total obligations.....	37,688	40,697	42,818	(1) 2,121	- - -
Unobligated:					
Salary reduction im- poundments.....	1,600	- - -	- - -	- - -	- - -
Other legislative impoundments.....	360	665	- - -	- - -	- 665(2)
Other amounts unobli- gated.....	6,485	- - -	- - -	- - -	- - -
Total appropriation....	46,133	41,362	42,818	+ 1,456	

The increase of \$1,456 for 1936 includes:

- (1) An increase of \$2,121 for 5% salary restoration, 1936 (to 100%).
- (2) A decrease of \$665, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General. The work under this appropriation includes the collection and study of plant parasites and other fungi, surveys of plant diseases in the United States, and investigations on the culture and diseases of mushrooms.

Mycology. This project is concerned with the identification of fungi of all groups for Federal and State workers, students, teachers, and the general public; with supplying information on fungi to those interested; with the preparation of detailed studies of various fungus groups as a basis for routine identifications; and with the upbuilding and maintenance of a representative collection of the fungi of the world for reference and study purposes. Special problems include the study of fungi attacking insects, of poisonous and edible field and forest mushrooms, and of parasites of destructive fungi as well as the comprehensive indexing of the literature on plant diseases and fungi in general, in cooperation with the plant disease survey. A fungus exchange service is maintained both as a means of securing new and valuable material for the national collection and to supply workers in the State Experiment Stations and elsewhere with specimens needed for research or instructional work.

This project operates as a national service unit along the above lines and the extent of the identifications and requests for fungus information supplied reaches a total limited only by the size of its staff. The fungus collection now totals over 300,000 specimens, with supplementary collections of photographs, microscopic preparations and necessary covering indexes, and is one of the largest and most comprehensive of its kind in the world.

Plant disease survey. Work under this project consists of collecting by means of surveys and through cooperation with State institutions and other agencies current information as to the occurrence, prevalence, the rate of spread, and the seasonal and geographical distribution of plant diseases in the United States, and the losses caused by them as well as the appearance of new and dangerous diseases or epidemics and unusual outbreaks of diseases. Files are maintained in which the information, in permanent and accessible form, is always available to plant pathologists and economists and others to whom they are of value. In cooperation with the Mycology project a file of plant disease literature of the World is maintained. By means of a mimeographed periodical, current information on the status of plant diseases in the United States is distributed to plant pathologists in this country and abroad.

The work of this project is all national or broadly regional in scope. It is non-competitive and organized on the basis of cooperation with and services to the State and Federal workers in the field of its activity. It functions as a clearing house for information on plant diseases and is the only agency in the country which attempts to study the significance of plant diseases and the factors which regulate outbreaks on a material basis. More than 150 State Experiment Station workers from every state in the Union are included in the list of voluntary official collaborators served by the Survey and whose reports are recorded, preserved, summarized, and distributed to interested persons and agencies currently through the project's periodical and privately through correspondence or the courtesy of the files as the occasion may arise.

Mushroom investigations. This project is concerned at present with improvements in cultural practices and sanitary procedure in mushroom houses; with studies in the life history, behavior and control of the "Truffle" disease and other destructive mushroom troubles; with the development of new non-competitive mushroom industries through work to establish in the United States cultivation of the European Truffle, the Japanese mushroom and to grow under artificial conditions the Morel and other desirable wild types; with studies to establish fundamental principles in the physiology and genetics of mushrooms and the inter-relation of aeration, temperature, and other factors in mushroom compost heaps and related problems as direct aids to the industry.

The mushroom industry of the United States represents a capital investment of approximately \$15,000,000 with annual gross receipts from mushroom products of about \$5,000,000. In close connection with this industry this project has developed improved cultural practices and disease control methods so as to lower production costs. It is also concerned with the development of similar industries through cultivation of other edible fungi (i.e. the truffle, a \$6,000,000 industry in France). Popular interest is shown by the sending out in one year of over 50,000 copies of publications on mushroom culture and diseases. Other definite results have been the development of an artificial compost to replace horse manure when such a step is necessary and control of the "bubbles" disease.

Appropriation, 1932	\$ 30,000
Appropriation, 1933	5,000
Appropriation, 1934	4,758

Appropriation, 1935	4,253 (a)
Budget Estimate, 1936	<u>14,307</u>
Increase, Budget 1936, compared with Appropriation, 1935	<u>10,054 (b)</u>

(a) Includes \$107 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$47 transferred from Bureau of Animal Industry: and (2) \$60 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(b) Increase of \$10,054 compared with 1935 appropriation consists of -

5% salary restoration, 1936 (to 100%).....	54
Increase in working funds for 1936	<u>+ 10,000</u>
	<u>+ 10,054</u>

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
<u>Obligated:</u>					
National arboretum..	\$3,942	\$4,253	\$14,307	(1) \$54	+ \$10,000(2)
<u>Unobligated:</u>					
Salary reduction					
impoundments	17	---	---	---	---
Other amounts unobli-					
gated	799	---	---	---	---
Total appropriation...	4,758	4,253	14,307	+ 10,054	

The increase of \$10,054 for 1936 includes:

(1) An increase of \$54 for 5% salary restoration, 1936 (to 100%)

(2) An increase of \$10,000, for preliminary clearing, maintenance of existing cleared areas, and similar preparatory development work at the National Arboretum which should be undertaken during the coming year.

The Department now owns 385 acres of land and has jurisdiction over approximately 400 acres additional for establishing a National Arboretum. The current budget provides \$4,307 for this purpose, which is adequate only for miscellaneous road maintenance, watchmen, and minor expenses.

WORK UNDER THIS APPROPRIATION

General. The National Arboretum was authorized by Congress in an Act approved March 4, 1927 (Public No. 799-69th Congress) for research and education concerning tree and plant life. A total of 385 acres has been purchased. The Arboretum in its final development will contain living examples of all species of woody plants suited to outdoor cultivation in this region that will furnish the basis for breeding studies with woody plants and ecological studies as well as botanical work. It will provide also such library, herbarium, office, greenhouse and nursery facilities as may be needed to carry out the scientific studies.

Under this appropriation routine maintenance operations are conducted on the National Arboretum. The amount represents a minimum for maintenance purposes and is totally inadequate to care for the area now included within the Arboretum which is 385 acres. A large amount of land still remains to be cleared and land already cleared should be prepared for planting. Collections of material now on the ground must be maintained and prepared for planting to prevent their total loss. This appropriation covers only bare maintenance and does not permit progress on plans for substantial development.

EMERGENCY FUNDS

Direct Allotment

Projects	: Obligated, : : 1934 :	Estimated, 1935
<u>Public Works Allotments</u> (National	:	:
Industrial Recovery Act):	:	:
<u>National Arboretum:</u>	:	:
Detailed survey of National	:	:
Arboretum Area, and prepara-	:	:
tion of large-scale map	\$ 97	\$9,903
Acquisition of lands for	:	:
Arboretum	385,253	747
Total	385,350	10,650

(c) NEMATOTOLOGY

Appropriation, 1932	\$ 58,260
Appropriation, 1933	50,000
Appropriation, 1934	46,640
- - - - -	
Appropriation, 1935	42,155 (a)
Budget Estimate, 1936	<u>43,961</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>1,806 (b)</u>

(a) Includes \$1,828 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$795 transferred from Bureau of Animal Industry; and (2) \$1,033 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(b) Increase of \$1,806 compared with 1935 appropriation consists of -
 5% salary restoration, 1936 (to 100%) + \$1,856
 Reduction: Continuation of 1935 impoundment - 50
 + 1,806

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease 5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Plant parasitic and soil inhabiting nematodes	\$ 34,231	\$ 39,895	\$ 41,761	\$ 1,856	- - -
Mermithidae, nemas in- festing insects	2,300	2,210	2,200	- - -	- - -
Total obligations . .	36,531	42,105	43,961	(1) 1,856	- - -
<u>Unobligated:</u>					
Salary reduction impoundments	1,600	- - -	- - -	- - -	- - -
Other legislative impoundments	1,600	50	- - -	- - -	-50 (2)
Other amounts unob- ligated	6,909	- - -	- - -	- - -	- - -
Total appropriation . . .	46,640	42,155	43,961	+ 1,806	

The increase of \$1,806 for 1936 includes:

(1) An increase of \$1,856 for 5% salary restoration, 1936 (to 100%).

(2) A reduction of \$50, continuing 1935 impoundment.

WORK UNDER THIS APPROPRIATION

General. It is widely known that parasitic nematodes or threadworms are the cause of numerous diseases in man and domesticated animals (hookworm, Ascaris, Trichina, etc.). It is not often realized, however, that numerous nematode species also parasitize lower animals (such as insects, millipeds, spiders, snails, etc.), or prey on plants (living in or on their roots, stems, leaves, flowers or seeds), or live more or less free (thousands of species) in the soil, in fresh and marine waters. These nematodes, most often invisible to the naked eye because of their small size, interfere in many ways with human activities. They are the cause of some of the worst crop diseases, such as root-knot, which today is known to affect over 1,000 different kinds of

plants, including a large portion of our most valuable crops (cotton, tobacco, Irish and sweet potatoes, tomatoes, lettuce, peach trees, grape vines, etc.) and ornamental plants, even various forest trees. There is the so-called sugar beet nematode, a very dreaded pest which attacks some 200 different hosts, formerly known mainly as the cause of "beet tiredness" or "beet sickness" of the soil, but recently the subject of very drastic measures in various potato growing regions of Sweden, Great Britain and Germany. Then there may be mentioned the bulb or stem nematode, a species also known to attack some 250 different host plants and in some cases very detrimentally, e.g., narcissus bulbs, alfalfa, clover, sweet potatoes and Irish potatoes. This form is subject to quarantine (No. 62). Another form, the strawberry nematode, is principally known as the causative agent of strawberry dwarf or crimp but also attacks a wide variety of plants, especially ornamentals such as begonias, ferns and chrysanthemums. Other outstanding nematode pests of plants are the wheat nematode (the cause of cockle ears), the citrus nematode, the meadow nematode, the burrowing nematode (mostly on tropical and subtropical plants like sugar cane, coffee trees, etc.) and numerous forms which are less important or little known at present.

Except where they attack useful insects such as bees, bumblebees, etc., the insect parasitic nematodes are thought to be one of nature's means of keeping insect and similar pests in control. In regions where grasshoppers never develop into damaging swarms, it is thought that parasitic nematodes of the group known as mermithids (sometimes called "hairworms" or "horsehair snakes") are the main natural controlling factor. These mermithids, however, require certain climatic and moisture conditions for their proper development and are therefore unable to exist in the semi-arid regions where grasshopper plagues regularly occur.

Work of this character is of a highly specialized type, necessitating detailed training for the investigator. There are few such specialists, so that most state and private agencies must rely on the division of Nematology as the sole agency from which to obtain information as to the possibility that a given disease may be caused by nematodes and advice as to procedure and control.

Plant parasitic and soil inhabiting nematodes. Each year activities under this project cover the examination and correspondence relating to six to eight hundred samples of plant and soil material and numerous inquiries pertaining to nematode diseases of plants, the significance of soil inhabiting forms for crop production and soil fertility. Such problems are presented as the significance of forms found in deteriorating lumber, or in freshwater filter beds, or in vinegar, or in animal skins during the tanning process, etc. Planned research activities comprise investigations into the life habits and development of the following plant parasitic forms: Root knot nematode, sugar beet nematode, bulb or stem nematode, and strawberry nematode. The following control methods are being investigated: crop rotation for the various nematode pests and their regional application; cultural control such as early planting, frequent cultivation, submersion and fallowing; seeking and testing nematode resistant crop plants and ornamentals; breeding resistant varieties of susceptible crops; testing chemical and other soil disinfection methods; and developing therapeutical methods to cure infested plants by killing the nematodes without harming the plants through hot water, vapor heat, vacuum treatment or chemical therapeutics (iodine, etc.).

To estimate the savings resulting from these activities is difficult; they touch home gardens as well as large scale crop production, and cover items such as these: A truck gardener is informed how to again grow healthy carrots instead of his knotted, unmarketable, root-knot-infested crop; a greenhouse man is told how his unmarketable, leafless begonias can be cured by controlling the strawberry nematode; a real estate company is informed how by proper procedure they may avoid further losses to shade trees affected by nematodes in their city development. The yearly savings through the activities under this project amount certainly to more than ten times the amount of the whole appropriation.

Mermithidae, nemas infesting insects. Activities under this project include the examination of and correspondence relating to some fifty to eighty sample collections of nematodes parasitic in lower animals, such as snails, earthworms, and insects (barkbeetles, Japanese beetle, mosquitoes, gypsy moths, grasshoppers, etc.). Such collections are submitted for information regarding the possible significance of the parasites as natural enemies of these pests. Investigations on the taxonomy, life history and economic significance of the mermithids, forms known particularly as grasshopper parasites, are now being prepared for publication.

Colonization of mermithids to control grasshoppers in regions where grasshopper outbreaks occur regularly as yet have not been successful. The results obtained through these investigations, however, are of great scientific value since they add a new page to our knowledge of how nature controls the ravages of insect and similar pests in certain regions.

(p) PLANT EXPLORATION AND INTRODUCTION

Appropriation, 1932	\$ 228,140
Appropriation, 1933	175,000
Appropriation, 1934	174,854 (a)

Appropriation, 1935	236,818 (b)
Budget Estimate, 1936	<u>204,483</u>
Decrease, Budget 1936, compared with	
Appropriation, 1935	<u>32,335 (c)</u>

(a) Includes \$11,280 transferred from "Fruit and Vegetable Crops and Diseases" for bibliographical studies on insecticide plants.

(b) Includes \$12,046 transferred from "Fruit and Vegetable Crops and Diseases" for bibliographical studies on insecticide plants; and \$6,475 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$2,817 transferred from Bureau of Animal Industry; and (2) \$3,658 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(c) Decrease of \$32,335 compared with 1935 appropriation consists of -

5% salary restoration, 1936 (to 100%)	+\$8,565
Decrease in working funds for 1936	-40,725
Reduction: Continuation of 1935 impoundment	<u>175</u>
	<u>-32,335</u>

PROJECT STATEMENT

Projects	1934	1935	1936	Increase or decrease	
		(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Plant exploration and introduction.....	\$159,487	\$236,643	\$204,483	(1)\$ 8,565	-\$40,725(2)
<u>Unobligated:</u>					
Salary reduction impoundments.....	7,200	- - -	- - -	- - -	- - -
Other legislative impoundments	8,000	175	- - -	- - -	- 175(3)
Other amounts unobligated	167	- - -	- - -	- - -	- - -
Total appropriation...	174,854	236,818	204,483	- 32,335	

The decrease of \$32,335 for 1936 includes:

(1) An increase of \$8,565 for 5% salary restoration, 1936 (to 100%).

(2) A net decrease of \$40,725 as follows:

(a) An increase of \$10,000 for spray residue investigations. Under an allotment of \$20,000 from P. W. A. funds, study was initiated of plants that might be used in the preparation of insecticides to replace chemical sprays that are harmful to human beings.

A supply of tropical plants has been obtained and produced and these are under propagation at field stations preparatory to larger field tests. The interruption of this work will practically nullify the progress being made during this year. There have also been discovered, by the examination of Chinese and other literature, indications of a considerable variety of plants with insecticidal properties, that are hardy to cold, and that could be cultivated in territorial United States to greater advantage than the subtropical and tropical plants usually considered as substitutes for chemical insecticides. Some of these are on hand and a discontinuation of the project will make further field investigation of this group of plants impossible.

In addition, there are two other groups of plants in Malaysia and South Africa that have not yet been investigated that should be studied to give a complete understanding and knowledge of the plants that might be used as substitutes for chemical sprays.

(b) A decrease of \$725 in working funds due to transfer of cleaning work to the Department of Interior.

(c) A decrease of \$50,000 in the project for exploration work in Asia in search of plants suitable for erosion-control work for which an appropriation of \$75,000 was provided in 1935. It is estimated that this work can be continued during 1936 for \$25,000.

(3) A reduction of \$175, continuing 1935 impoundment.

CHANGE OF LANGUAGE

The change in language in this item is made in order to describe more correctly the activities conducted under this appropriation.

Omit after \$218,297 the following: "of which \$20,000 shall be immediately available".

WORK UNDER THIS APPROPRIATION

General. Serves as a cooperating and coordinating agency for securing from all parts of the world new, rare, and promising plants that may be useful in the development of new crop industries directly for the diversification or expansion of economic needs or as material to be used by plant breeders especially as related to the development of crops to diseases and insects, drought and other vicissitudes. Initial protection is provided against the introduction of foreign insects and diseases and preliminary propagation and tests conducted at four widely separated field stations. Cooperation maintained with crop specialists in the U.S. Department of Agriculture, state agricultural colleges, and experiment stations, botanic gardens, arboreta, nurserymen, and with selected lists of private, specially qualified individuals. Studies are conducted of potential crop plants and of soil and climates of foreign countries as compared to this country with a view to obtaining materials for introduction most adapted to our needs.

This Division is now generally recognized as the clearing house through which needed plant material is most effectively received. It is also recognized in this country and abroad as the most effective agency in exchanging and forwarding American plant material to foreign research workers and results obtained have been so effective that its organization and procedure have been studied by other countries in order to establish similar organizations. Introductions obtained by exploration and through contacts built up with foreign research workers, nurserymen, botanists, explorers, and plantmen, as well as our own consular officers and commercial and agricultural attaches, have developed into important crops having a high economic value in our domestic agriculture.

Foreign explorations are carried on by agricultural explorers for the purpose of receiving new and promising types of plants superior to those now grown in this country and having promise in aiding in the development of new crop industries and further advancing our agricultural and horticultural interests through breeding, the development of disease resistant crops, meeting the changes in shifting economic needs, as well as contributing to such broad problems as erosion control, range improvement, and beautification of the home and its surroundings. As an adjunct to field operations, world wide exploration work is carried on through correspondents and collaborators in foreign countries, having in view the same objects and purposes.

Since this work is carried on with a view to aiding agriculture in all parts of the country, it is widely regional. Important grain introductions include varieties of wheat, barley, rye, oats, rice and grain sorghums which

have become standard over wide areas of our grain growing regions. Forage introductions of varieties of alfalfa, soybeans, lespedezas, grasses and vetches include many which have become an indispensable part of our agriculture. One cotton variety, the Acala, has been developed into the single variety of importance around which the cotton industry of the southwest largely centers. While results in the field of horticulture are slower because of the long-time nature of most of the crops, certain introductions of citrus fruits, avocados, and nectarines have become commercially important crops and other introductions have been of material assistance to breeders in the development of new varieties and disease and insect-resistant root stocks.

Experimenters' service activities under this appropriation include the widespread regional testing of all introduced plant material with a view to determining its adaptability to the soils and climates of this country. This is accomplished by means of organized cooperation with crop specialists of the United States Department of Agriculture, state agricultural colleges and experiment stations, botanic gardens and arboreta, together with selected lists of nurserymen and private individuals. Similar tests and experiments are carried on at four special plant introduction gardens so located as to receive widespread regional effects of soil and climate.

This work is an essential part of plant introduction. Before extensive cultivation of introduced plants can be advised, reliable information must be obtained concerning their adaptability and their potential value to American agriculture and horticulture. This information can only be obtained by means of widespread field tests. A vital activity of this service is to prevent the bringing in of new insect pests or diseases incident to the introduction of plant material. Special facilities for growing and propagating under quarantine and detention under rigid control are utilized for this purpose.

Plant geography investigations are made of the relation of crop distribution to climatic and soil conditions, and studies made of the important problems of plant introduction from a geographical point of view for the purpose of locating foreign sources of potentially valuable crops and to insure that such crops, when introduced, are provided with soil and climatic conditions suited to their needs.

This work is essential to the development of a proper and intelligent background for plant introduction and the necessary testing work connected therewith. Its purpose is to chart the field in advance so that there is a minimum of lost motion in the search for new crops and the proper placing of these crops for experimental use. Unless adequate plans are made in advance through this project, much of the efficiency of introduction procedure is lost. Field stations are maintained at Chico, California; Coconut Grove, Florida; Savannah, Georgia; and Glenn Dale, Maryland.

(q) PLANT NUTRITION

Appropriation, 1932	\$ 18,050
Appropriation, 1933	18,050
Appropriation, 1934	16,900

Appropriation, 1935	15,342 (a)
Budget Estimate, 1936	<u>16,024</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>682 (b)</u>

(a) Includes \$682 to cover 5% salary adjustment for 1935 (to 95%), as follows:
 (1) \$297 transferred from Bureau of Animal Industry; and (2) \$385 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(b) Increase of \$682 compared with 1935 appropriation consists of -

5% salary restoration, 1936 (to 100%)	+ \$732
Reduction: Continuation of 1935 impoundment.	- 50
	<u>+ 682</u>

PROJECT STATEMENT

Projects	1934	1935	1926	Increase or decrease	
		(Estimates)	(Estimates)	5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Plant nutrition investigations.....	\$13,873	\$15,292	\$16,024	(1) \$732	- - -
<u>Unobligated:</u>					
Salary reduction impoundments.....	600	- - -	- - -	- - -	- - -
Other legislative impoundments.....	- - -	50	- - -	- - -	- \$50 (2)
Other amounts unobligated	2,427	- - -	- - -	- - -	- - -
Total appropriation	16,900	15,342	16,024	+ 682	

The increase of \$682 for 1936 includes:

- (1) An increase of \$732 for 5% salary restoration, 1936 (to 100%).
- (2) A reduction of \$50, continuing 1935 impoundment.

WORK UNDER THIS APPROPRIATION

General. The great variation in influence of certain crops on both yield and quality of succeeding crops in the rotation system is particularly important. Plant Nutrition investigations are directed toward the determination of the extent and significance of the influence of these variations, particularly on yield and quality of crops included in the rotation, and include the relative plant food requirements of the crops in the rotation system.

Studies are also made of the effect of length of day on growth, development and composition of plants including effects of daily duration, intensity and the color or composition of the light. The work is carried on with the same personnel as those engaged in Tobacco Investigations.

The practical importance of the cropping system on yield and quality of crops is illustrated by recent field trials in which a weed fallow preceding tobacco has consistently raised the market value of the tobacco crop from an average of 125 dollars to approximately 375 dollars per acre because of remarkable improvement in yield and especially in quality of the leaf. Other crops also may be greatly affected by the rotation system. The nutrition studies are demonstrating that for many important soils it is necessary to include in the fertilizer mixtures, materials which will supply certain chemical elements not previously considered such as magnesium, calcium, sulphur and boron. These results have an important bearing on the correct use of the new highly concentrated fertilizer materials. Discovery of the remarkable effects of seasonal and latitudinal change in length of day on the growth and the flowering and fruiting of plants is being effectively applied to the production of seed of certain varieties of tobacco under short day conditions in the South while the crop of commercial leaf is grown in Northern latitudes where seed can not be produced because of the long days. These principles are now being found to largely govern the northerly or southerly range of the different varieties and strains of various crop plants. They are also finding practical application in the commercial production of certain flowers such as chrysanthemum several weeks in advance of their normal season by shading to shorten the day length. This method of hastening and controlling time of flowering is being extensively used in the production of new varieties of crop plants by breeding.

(r) PLANT RESERVE STATIONS

Appropriation, 1932	- - -
Appropriation, 1933	- - -
Appropriation, 1934	- - -

Appropriation, 1935	- - -
Budget Estimate, 1936	\$ <u>483,198</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>483,198</u>

PROJECT STATEMENT

Projects	:	:	1935	:	1936	:	Increase or decrease
	:	1934	:	:	:	:	5% Salary : Working
	:	:	(Estimated)	:	(Estimated)	:	Restoration: Funds
Plant reserve sta-	:	:	:	:	:	:	:
tions	:	- - -	:	- - -	:	\$483,198	:
	:	:	:	:	:	- - -	:+\$483,198(1)

(1) New appropriation for maintenance and operation of soil-erosion nurseries established under a P.W.A. allotment of \$630,000 in 1934-5.

WORK DONE UNDER THIS APPROPRIATION

These nurseries, originally designated as "Erosion Control Nurseries", have been developed for the production of standard erosion plants and for the experimental production in limited quantities of plants, both native and foreign, that might serve immediate erosion needs and secondary uses as food plants for birds and other game, shelter belts, tannic production, and the like. Cooperation is maintained with the Department of the Interior and the Bureau of Chemistry and Soils in furnishing material to complete their demonstrations. Data are collected relating to the re-establishment of existing vegetation, known plant successions, and special propagations of recommended material in order to hasten production and revegetation.

Collections of seeds and plants of native species best suited to erosion have been completed in part and are in progress to provide the large quantities needed for use before the end of the fall planting season.

An important part of the work under this project has been the physical establishment and development of the nurseries. Activities up to the present time have included the securing of land sites, necessary construction, conditioning of land, installation of irrigation and other operations necessary in order to permit large scale field operations. The work of development has necessarily been slow, but a large amount of useful material has already been planted and by the end of the collecting season all nurseries will be equipped to handle the large volume of plant material collected during the field season.

The continuation of these nurseries is essential to the work initiated. The two-year period is not enough to admit of reliable conclusions as to the actual usefulness of plants under production, nor is it sufficient to develop standard erosion plants to a proper size for planting in the numbers required. Although local means have been recognized and cooperation has been maintained with other erosion agencies, this is the only project justified in continuing the propagation of plants not now in commercial cultivation or in limited commercial production, likely to be most suited to erosion control. With the work now under way and the large volume of plant material that will be available for fall planting, this project, if carried to a proper conclusion, can not only assist in the production of standard erosion plants but can through cooperation with other Federal Agencies utilizing new and hitherto untried types, develop information with regard to new erosion plants which should extend the usefulness of the project over a wider area.

For the purpose of continuing these investigations \$483,198 is requested, to be used as follows:

Washington, D. C.	\$33,298
Mandan, North Dakota.	21,000
Stillwater, Oklahoma	26,600
Cheyenne, Wyoming	17,700
Elsberry, Missouri.	63,500
San Antonio, Texas	23,000
Shreveport, Louisiana	20,500
Ames, Iowa	55,500
Pullman, Washington	19,100
Belle Mina, Alabama	22,000
Tucson, Arizona	55,400
Safford, Ariz. (Supplements work headquartered at Tucson)	22,600
Shiprock, N.M. (Supplements work headquartered at Tucson).	32,500
Statesville, N.C.	61,700
Placerville, California	8,800
Total	<u>483,198</u>

EMERGENCY FUNDS

Direct Allotment

Projects	Obligated: 1934	Estimated, 1935
<u>Public Works Allotments (National</u>		
<u>Industrial Recovery Act):</u>		
<u>Erosion-Control Nurseries:</u>		
Construction of erosion - control		
nurseries for the growing of soil-		
protecting trees, bushes, grasses,		
and other plants	\$57,806	\$487,365
Purchase of land	12,429	2,400
Total	70,235	489,765

(s) RUBBER AND OTHER TROPICAL PLANTS

Appropriation, 1932	\$140,463
Appropriation, 1933	75,000
Appropriation, 1934	49,933 (a)

Appropriation, 1935	45,272 (b)
Budget Estimate, 1936	<u>46,749</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>1,477 (c)</u>

(a) Excludes \$19,541 transferred to "Cotton and Other Fiber Crops and Diseases" for fiber plant investigations.

(b) Excludes \$16,851 transferred to "Cotton and Other Fiber Crops and Diseases" for fiber plant investigations; and includes \$2,088 to cover 5% salary adjustment for 1935 (to 95%) as follows: (1) \$940 transferred from Bureau of Animal Industry; and (2) \$1,148 from fund authorized by Sec. 21(e) of the Act of March 28, 1934.

(c) Increase of \$1,477 compared with 1935 appropriation consists of -
 5% salary restoration, 1936 (to 100%) +\$1,837
 Decrease in working funds for 1936 - 310
 Reduction: Continuation of 1935 impoundment - 50
+ 1,477

PROJECT STATEMENT

Project	1934	1935 (Estimated)	1936 (Estimated)	Increase or Decrease	
				5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Rubber and other tropical plants ..	\$47,906	\$45,222	\$46,749	(1)\$1,837	-\$310 (2)
<u>Unobligated:</u>					
Salary reduction impoundments.....	1,837	- - -	- - -	- - -	- - -
Other legislative impoundments.....	- - -	50	- - -	- - -	- 50 (3)
Other amounts unobligated	190	- - -	- - -	- - -	- - -
<u>Total appropriation..</u>	<u>49,933</u>	<u>45,272</u>	<u>46,749</u>	<u>+1,477</u>	

The increase of \$1,477 for 1936 includes:

(1) An increase of \$1,837 for 5% salary restoration, 1936 (to 100%).

(2) A decrease of \$310 in working funds due to transfer of cleaning work to the Department of Interior.

(3) A reduction of \$50, continuing 1935 impoundment.

CHANGE IN LANGUAGE

The change in language in this item is caused by the transfer from the appropriation of Rubber, Fiber and Other Tropical Plants of the work on fiber crops, and merely provides for the inclusion of this activity under this appropriation.

WORK DONE UNDER THIS APPROPRIATION

General. Under this appropriation experiments are conducted bearing on the introduction into cultivation of foreign and native plants of potential value in the production of rubber and on the acclimatization and adaptation of various tropical crop plants to tropical regions of the United States. Studies are conducted with such crop plants as cacao and coffee. The most

important investigations of ornamentals are those with palms. Plantings are maintained in southern Florida and selections are made of species and strains which are adapted to the warmer regions of this country. Rubber Investigations involve the study of both foreign and native plants containing rubber and the selection of high-yielding strains and experiments on methods of rubber extraction.

Investigations of tropical plants are essential to the establishment of new crops and ornamentals in the South. Experiments and tests conducted at plant introduction stations have resulted in the selection of a large number of tropical plants adapted to cultivation in the South, and other plants now being tested have shown promise of being valuable additions to south tropical horticulture. Rubber investigations constitute the most important phase of tests now under way. Over half of the world's output of rubber is consumed in the United States. No other commodity which is not produced in commercial quantities inside our borders is of more importance in our American life. Not only do we produce no rubber in important quantity but the source of 90 percent of our rubber is thousands of miles away in the East Indies and may be cut off entirely either by economic manipulation or military mischance; or the price may be raised so high by restrictive combinations of producing areas as to compel us to pay a high premium to foreign investors. In case of war our very existence might depend on assurable supplies of rubber. Also, actual or potential production of rubber in the United States would act as a curb to check foreign combinations formed to increase the cost of rubber artificially.

(t) SEED INVESTIGATIONS

Appropriation, 1932	\$ 78,220	
Appropriation, 1933	75,500	
Appropriation, 1934	70,648	

Appropriation, 1935	64,356	(a)
Budget Estimate, 1936	<u>67,293</u>	
Increase, Budget 1936, compared with		
Appropriation, 1935	<u>2,937</u>	(b)

PROJECT STATEMENT

Projects	1934	1935	1936	Increase or decrease	
		(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
Obligated:					
Seed testing.....	\$33,822	\$37,252	\$39,054	\$1,802	- - -
Federal Seed Act.....	24,578	26,754	27,989	1,235	- - -
International Seed Testing Congress.....	225	250	250	- - -	- - -
Total obligations.....	58,625	64,256	67,293	(1)3,037	- - -
Unobligated:					
Salary reduction impoundments.....	2,500	- - -	- - -	- - -	- - -
Other legislative impoundments.....	- - -	100	- - -	- - -	- 100(2)
Other amounts unob- ligated	9,523	- - -	- - -	- - -	- - -
Total appropriation....	70,648	64,356	67,293	+ 2,937	

The increase of \$2,937 for 1936 includes:

- (1) An increase of \$3,037 for 5% salary restoration, 1936 (to 100%)
- (2) A reduction of \$100, continuing 1935 impoundment.

WORK UNDER THIS APPROPRIATION

General. The Division of Seed Investigations protects the quality of seeds used in the United States through research and law enforcement.

The work under this appropriation includes research on the problems connected with the quality of agricultural seeds, informational service on samples submitted for test and in connection with enforcement of Federal Seed Act. Co-operative Seed Testing Laboratories are maintained at Sacramento, Calif., Lafayette, Ind., Columbia, Mo., and Corvallis, Ore.

Seed testing. The research work is planned to find means by which various crop and weed seeds similar in appearance may be separated and identified and to prepare descriptions and illustrations to make the work available to others; to determine the kinds of weed and other seeds which occur in agricultural seeds produced in different seed-producing areas of the world as an aid to determine the origin of particular lots of seed in relation to their adaptability for use in any given region; to study the physiology of seed germination and the procedure for testing seeds to indicate their plant-producing value, including those which require unusual treatment during the germination test; to determine the influence on the vitality of seeds of conditions of production and storage and of their movement from one climatic area to another having widely different humidity and temperature; to determine the length of

time seeds will retain their vitality when buried in soil as related to weed distribution and weed eradication.

As a result of these functions, it is now possible to definitely separate and identify most of the agricultural grasses, the vetches, and many of the Brassicas, as well as many other crop and weed species.

A comprehensive study of the foreign seeds found in red clover and alfalfa from various countries of the world is being prepared for publication. It is such knowledge, resulting from fundamental research, that has placed the sale of agricultural seeds on a definite basis and has made seed control possible.

Methods have been developed to hasten germination of seeds of many groups of cultivated plants where germination has been found difficult. These studies have dealt both with problems designed to advance our knowledge of the general principles of seed germination and with specific difficulties in the carrying-out of tests of the viability of seeds. Continued emphasis has been placed on the primary importance of determining possible agricultural value when testing seeds for germination.

Preliminary results of the storage experiments have revealed facts that should be of service in both foreign and domestic trade in seeds. One buried seed experiment has shown the ability of some seeds to remain for at least 30 years in the soil and then make vigorous plants. Another trial shows the ability of red rice to remain viable in rice fields for several years.

Seeds are examined to determine their kind, adulteration, freedom from other crop seeds and weeds, and plant-producing power, and region of production. These examinations are made for investigators in the U. S. Department of Agriculture, various government purchasing agencies, State officials, farmers and dealers in seeds. During the past year, many tests have been conducted for various organizations such as Soil Erosion Service and Federal Surplus Relief Corporation.

Seeds to be exported are analyzed and certificates issued to exporters in compliance with the agreement of the International Seed Testing Association.

Federal Seed Act. The import provisions of the Federal Seed Act regulate the quality of the more important forage crop seeds imported into the United States and indicate the general inadaptability of imported alfalfa and red clover. The interstate clause prohibits the interstate shipment of all seeds which are fraudulently misbranded. In this connection, cooperative seed testing laboratories are maintained at Sacramento, California, Corvallis, Oregon; Lafayette, Indiana; and Columbia, Missouri.

Every lot of seed subject to the import provisions of the Federal Seed Act is sampled by the U.S. Customs Service, and all samples are tested, and only those meeting the requirements of the Act are permitted entry. The coloring of all imported seed of alfalfa and red clover is supervised. The result of the enforcement of the import provisions of the Act has been to keep out of the country seeds which are of low quality. The coloring provision

for alfalfa and red clover has resulted in a nationwide agronomic trial of imported vs. domestic seed which has been carried on without cost. The common knowledge that, with certain exceptions, imported seeds of alfalfa and red clover are generally inferior has been one of the contributing factors in the reduced imports of the seeds of these two major forage crops.

The interstate clause of the Act insures each State protection from the shipment into the State of fraudulently misbranded seed of any kind, the States themselves not having authority to prevent such shipment. The enforcement of this clause of the Act has been carried on in cooperation with State authorities and has resulted in prosecutions for the shipment of misbranded seeds of oats, rye, vetch, soybeans; cowpeas, clover, alfalfa, sorghum, and other seeds on account of misbranding as to origin, adulteration, percentage of pure seed and germination.

International Seed Testing Congress. Under this project participation in the International Seed Testing Congress on the part of the United States is authorized to the extent of \$250. The Seed Testing Congress is endeavoring to set up international rules for testing seed to insure uniformity.

(u) SOIL FERTILITY INVESTIGATIONS (a)

Appropriation, 1932	\$ 220,080
Appropriation, 1933	206,980
Appropriation, 1934	195,556

Appropriation, 1935	166,536 (b)
Budget Estimate, 1936	<u>172,157</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>5,621 (c)</u>

- (a) In order to provide for a more logical and effective grouping of the work of the Department, it is recommended that this appropriation be transferred from the Bureau of Chemistry and Soils to the Bureau of Plant Industry.
- (b) Includes \$7,168 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$3,118 transferred from Bureau of Animal Industry; and (2) \$4,050 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.
- (c) Increase of \$5,621 compared with 1935 appropriation consists of -
- | | |
|---|----------------|
| 5% salary restoration, 1936 (to 100%) | + \$7,121 |
| Decrease in working funds for 1936 | - 300 |
| Reduction: Continuation of 1935 impoundment | - <u>1,200</u> |
| | + <u>5,631</u> |

PROJECT STATEMENT

Projects	1934	1935	1936	Increase or decrease	
		(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Soil fertility investigations.....	\$115,704	\$120,625	\$125,523	\$5,198	-\$300 (2)
Cotton root-rot investigations.....	33,850	36,497	38,050	1,553	- - -
Soil improvement Sandhill Station....	7,963	8,214	8,584	370	- - -
Total obligations....	157,517	165,336	172,157	(1)7,121	- 300
<u>Unobligated:</u>					
Salary reduction impoundments.....	6,164	- - -	- - -	- - -	- - -
Other legislative impoundments	1,299	1,200	- - -	- - -	-1,200 (3)
Other amounts unobligated	30,576	- - -	- - -	- - -	- - -
Total appropriation..	195,556	166,536	172,157	+5,631	

The increase of \$5,631 for 1936 includes:

- (1) An increase of \$7,121 for 5% salary restoration, 1936 (to 100%).
- (2) A decrease of \$300 in the project for "Soil Fertility Investigations," due to transfer of cleaning work to Department of Interior.
- (3) A reduction of \$1,200, continuing 1935 impoundment.

WORK UNDER THIS APPROPRIATION

General. Work under this appropriation consists of studies of soil fertility and fertilizer problems to develop an economical program of fertilizer practice which will enable the farmer to reduce his cost of production and produce crops of better quality. The work involves the study of the fertilizer requirements of different soil types for different crops and of the influence of the various fertilizer elements on the growth, maturity, yield, quality, and disease resistance of crops; biochemical soil and fertilizer studies on the relation of organic matter, green manure, and crop residues to soil fertility; cotton root-rot soil and fertilizer studies; and soil improvement investigations in the sand hill section of the South. Knowledge of inherent soil fertility and the relative suitability of specific soil types to specific crops, as well as knowledge of the particular fertilizers required to supplement natural soil fertility for certain crops, are important factors in reducing cost of crop production. Moreover, every acre of crop soil is subject to depreciation and decreased efficiency if proper methods of maintenance are not followed, and this is a factor in conservation of invested capital as well as in cost of production.

Soil fertility investigations. Under this project the fertilizer requirements of the principal soil types and agricultural regions are being determined for a number of important crops including cotton, sugarcane, sugar beets, potatoes, truck crops, citrus fruits, and pecans, to determine the best fertilizer ratios, the most desirable kind and amount of each fertilizer ingredient to use, and the most economical rate of application. The work involves the establishment of field experiments on prominent soil types in cooperation with State experiment stations and leading farmers. Field laboratories are located at Houma and Shreveport, Louisiana, Orlando, Florida, Albany, Georgia, Chadbourne, North Carolina, Scottsbluff, Nebraska, and Davis, California, and field experiments are conducted in those States and in Maine, New York, New Jersey, Pennsylvania, Virginia, South Carolina, Ohio, Michigan, Montana, Idaho, Colorado and Utah. Biochemical soil and fertilizer studies are made at Arlington Farm on the nature, quantity and distribution of organic compounds in soils and their effect on biological activity, on the changes brought about in soil constituents by growing plants, on the changes which fertilizer salts undergo in soils and their effects on plants, which researches are of fundamental importance in developing sound fertilizer usage. Soil fertility investigations are designed to enable the farmer with the least possible outlay for fertilizer to obtain the greatest net return for his work through reduction of unit cost and meeting the demand for better quality products.

Cotton root-rot investigations. Work under this project has for its objective the development of means for reducing losses resulting from root-rot of cotton. Over 9,000,000 acres in the Southwestern States are infested with root-rot. Work is carried on at the field station at Austin, Texas, and field fertilizer experiments are at present conducted in nine counties of the black-land belt of Texas. The work consists of field and laboratory studies to determine the influence of fertilizers and soil amendments on cotton root-rot, the chemical and physical difference between infested and non-infested soils, and the influence of cultural methods and crop rotations in conjunction with the use of fertilizers in the control of root-rot. The work is cooperative with the University of Texas and the Texas Experiment Station.

Dairying and soil improvement (South Carolina Station).

The work under this project is conducted at the Dairy and Soil Improvement Experiment Station at Columbia, (Pontiac) S.C., in cooperation with the South Carolina Experiment Station, and the Bureau of Dairy Industry. The object of the investigations is to develop means of producing forage crops in the sand hill section, improve the productivity of the soils, and develop a dairy industry. The work of this Bureau includes chemical investigations of changes in soil and organic matter as a result of green manure crops, determination of best fertilizer ratios for growing soybeans in this section, study of the effects of legumes, and determination of the changes in the soil resulting from the use of different commercial fertilizers and crop systems. The results of these studies will be applicable to the entire hill section of the South, and should serve to determine whether or not it is possible to pursue a system of soil management that will improve and permanently maintain the productive capacity of these sandy lands under the climatic conditions that obtain in the region.

(v) SOIL MICROBIOLOGY INVESTIGATIONS (a)

Appropriation, 1932	\$ 43,820
Appropriation, 1933	43,355
Appropriation, 1934	40,641
<hr/>	
Appropriation, 1935	38,530 (b)
Budget Estimate, 1936	<u>39,854</u>
Increase, Budget 1936, compared with Appropriation, 1935	<u>1,324 (c)</u>

(a) In order to provide for a more logical and effective grouping of the work of the Department, it is recommended that this appropriation be transferred from the Bureau of Chemistry and Soils to the Bureau of Plant Industry.

(b) Includes \$1,765 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$768 transferred from Bureau of Animal Industry; and (2) \$997 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(c) Increase of \$1,324 compared with 1935 appropriation consists of -
 5% salary restoration, 1936 (to 100%) + \$1,774
 Decrease in working funds for 1936 - 300
 Reduction: Continuation of 1935 impoundment . . . - 150
+ 1,324

PROJECT STATEMENT

Projects	1934	1935	1936	Increase or decrease	
		(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Soil microbiology investigations	\$35,260	\$38,380	\$39,854	(1) \$1,774	- \$300 (2)
<u>Unobligated:</u>					
Salary reduction impoundments	1,299	- - -	- - -	- - -	- - -
Other legislative impoundments	- - -	150	- - -	- - -	- 150 (3)
Other amounts unobligated	4,082	- - -	- - -	- - -	- - -
Total appropriation . .	40,641	38,530	39,854	+ 1,324	

The increase of \$1,324 for 1936 includes:

(1) An increase of \$1,774 for 5% salary restoration, 1936 (to 100%)

(2) A decrease of \$300 in working funds due to transfer of cleaning work to the Department of Interior.

(3) A reduction of \$150, continuing 1935 impoundment.

WORK UNDER THIS APPROPRIATION

General. Work under this appropriation includes tests and inspection of commercial cultures of legume nodule bacteria and of soil inoculants to insure that cultures sold to farmers are true to type, viable, and efficient for the purpose claimed. Research is also conducted on legume nodule bacteria in connection with the efficiency of strains, influences which alter their quality or interfere with their function, methods of practical application, and the development of special strains for all legume crops including those newly introduced into this country. Since the proper nitrogen fixing bacteria must be applied to legume seed wherever the growing of a particular crop is extended into a new area, a tested collection of strains is maintained to aid in the establishment of new crops in cooperation with State experiment stations, county agents and individual farmers. Other researches cover the decomposition of green manures, cover crops, and crop residues; the effect of soil reactions and soil treatments on the microorganism and their activity in the soil; studies of the organisms responsible for the decay of soil organic matter; and studies on the use of fungi and bacteria for determining fertilizer needs of soil. These investigations are planned to obtain a better understanding of the nitrogen economy of the soil and the relation of the micropopulation of the soil to different manuring and cropping systems, with the view to increasing the efficiency of farm practices.

(w) SUGAR PLANT INVESTIGATIONS

Appropriation, 1932	\$ 413,700
Appropriation, 1933	385,462
Appropriation, 1934	331,900 (a)

Appropriation, 1935	299,485 (b)
Budget Estimate, 1936	<u>312,079</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>12,594</u> (c)

(a) Excludes \$8,100 transferred to "Fruit and Vegetable Crops and Diseases" for curly top diseases of vegetables.

(b) Excludes \$8,180 transferred to "Fruit and Vegetable Crops and Diseases" for curly top diseases of vegetables; includes \$12,362 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$5,377 transferred from Bureau of Animal Industry; and (2) \$6,985 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(c) Increase of \$12,594 compared with 1935 appropriation consists of -

5% salary restoration, 1936 (to 100%)	+\$12,844
Reduction: Continuation of 1935 impoundment . . .	- 250
	<u>+ 12,594</u>

PROJECT STATEMENT

Projects	1934	1935	1936	Increase or decrease	
		(Estimated)	(Estimated)	5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Sugar beet investigations	\$185,761	\$191,985	\$200,829	\$ 8,844	- - -
Sugar cane investigations	92,430	107,250	111,250	4,000	- - -
Total obligations..	278,191	299,235	312,079	(1) 12,844	- - -
<u>Unobligated:</u>					
Salary reduction impoundments	14,000	- - -	- - -	- - -	- - -
Other legislative impoundments	3,600	250	- - -	- - -	-\$250 (2)
Other amounts unobligated	36,109	- - -	- - -	- - -	- - -
Total appropriation	331,900	299,485	312,079	+ 12,594	

The increase of \$12,594 for 1936 includes:

- (1) An increase of \$12,844 for 5% salary restoration, 1936 (to 100%)
- (2) A reduction of \$250, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General. The work under this appropriation consists chiefly of research on the problems connected with the growing of sugarcane in Continental United States, Puerto Rico, Hawaii and the Virgin Islands and sugar beets and beet seed in the United States, including the control of diseases affecting these crops.

Sugar beet investigations. Under this project superior yielding varieties are being developed, strains resistant to disease are selected for increase, types of beets better adapted to conditions in this country are produced, experiments involving comparative studies of cultural practices are performed, and special methods for the control of curly-top and other serious diseases, including special investigations in cooperation with the Bureau of Entomology and Plant Quarantine for the control of the curly-top disease of sugar beets transmitted by the leafhopper. The sugar-beet industry is particularly interested in the investigations on field methods of controlling diseases and in the increase of seed supplies of disease-resistant sugar beets.

Sugar production from beets in Continental United States has, by recent enactment, been stabilized at 1,550,000 tons. Approximately 1,000,000 acres in 18 States are used for beet growing and in these states the crop is an important element in the cropping system. The capital investment in farm lands, farm equipment, irrigation systems, factories, factory equipment, transportation and power facilities directly concerned in sugar-beet production and beet

sugar manufacture may be conservatively placed at \$350,000,000; the capital investment in important subsidiary industries furnishing supplies and service to the beet industry and in the livestock industry directly concerned in utilizing sugar beet by-products as feed would greatly increase this figure. For the 1934 crop, the fabricated products, beet pulp, molasses and refined sugar had a value in excess of \$85,000,000 and the sugar beets were worth on the farm \$50,000,000. The sugar beet crop, in good years, has been a profitable crop for the farmer to grow. It should be even more favorably considered with a parity price paid farmers for sugar beets. The crop, however, because of ravages of disease, improper cropping practices and soil depletion, has been an extremely hazardous crop in many regions. A truly stabilized and safe beet agriculture can only be secured as the enormous losses to farmers and factory arising from disease epidemics and from inefficient crop practices are removed by the findings and application of agricultural research. Gratifying progress in the development of strains of sugar beets resistant to curly-top and leaf spot, the principal diseases of beets, has been made and one strain showing a measure of resistance to curly-top has been released for commercial culture, and will be almost exclusively used in the 1935 plantings of the intermountain states. A variety markedly improved in leaf spot resistance is now being increased for release to growers in the areas affected by that disease. Strains of greater promise are in process of development and test, forecasting still greater reduction of the disease hazard which takes a toll of many millions of dollars every year and threatens the existence of a large proportion of the industry with capital investments of over fifty million dollars. Successful fruition of work on disease resistant strains of sugar beets has brought into existence a new industry for American farmers, the commercial production of sugar-beet seed, the beginning of which, attributable entirely to this research, was started on a substantial basis in 1933, and produced approximately 15 percent of domestic seed requirements in 1934. This seed enterprise, if work be actively continued, will free American beet growers from the traditional dependence on Europe seed supplies, a situation which in the coming season, because of marked advance in price of European seed, would increase costs of production. (California Agricultural Experiment Station, New Mexico Agricultural Experiment Station, Colorado Agricultural Experiment Station, Minnesota Agricultural Experiment Station, Michigan Agricultural Experiment Station, Division of Soil Fertility, and Carbohydrate Division, Bureau of Chemistry and Soils, Division of Mechanical Equipment, Bureau of Agricultural Engineering cooperating).

Sugarcane investigations. Under this project investigations include the study of sugarcane diseases, development of disease control methods, and breeding and testing new varieties of cane to secure disease resistant, higher yielding commercial varieties better adapted to natural climatic and soil conditions. The sugarcane industry is particularly interested in the investigations on field methods of controlling diseases, the continued development of disease resistant varieties looking toward minimizing the fluctuations in production, due to recurring disease hazards and in the increase and distribution of seed supplies of the improved varieties as they are developed.

The project directly serves cane producers in seven States and Puerto Rico, who utilize about 490,000 acres of land for sugar production and more

than 100,000 acres for sirup production. The welfare of approximately 1,000,000 people living in these cane-producing areas is directly or indirectly dependent upon the crop. About 330,000,000 are invested in land, transportation and milling equipment, implements, etc. Incidental service features of the activities in this project are extended to the sugar industries of the Territory of Hawaii and the Philippine Islands, which have combined capital investments of about \$350,000,000. Outstanding progress has resulted from this work, the most striking example being the reconstitution of the Louisiana sugar cane industry by means of disease-resistant varieties of cane. The five-year average production of sugar reflecting the acre yield of cane during the period 1924-28 dropped because of a recently introduced virus disease to 95,400 tons per year compared with an average of 280,000 tons for the previous 20 years. Restoration to an average of over 200,000 tons per year for the five years just past is directly attributable to this research and given reasonable encouragement and protection the outlook for complete restoration of this important industry and the cane sirup industries of the Gulf States seems dependent only on intensive prosecution of work under this appropriation. (Puerto Rico Agricultural Experiment Station, Louisiana Agricultural Experiment Station, and Mississippi Agricultural Experiment Station co-operating).

Field stations and laboratories are maintained at the following points: Canal Point, Florida; Cairo, Georgia; Houma, Louisiana, Guayama, Puerto Rico; Meridian, Mississippi; Twin Falls, Idaho; Riverside, California; Fort Collins, Colorado; Salt Lake City, Utah; and Rocky Ford, Colorado.

(x) TOBACCO INVESTIGATIONS

Appropriation, 1932	\$91,000
Appropriation, 1933	90,600
Appropriation, 1934	80,000

Appropriation, 1935	72,598 (a)
Budget Estimate, 1936	<u>85,844</u>
Increase, Budget 1936, compared with	
Appropriation, 1935	<u>13,246</u> (b)

(a) Includes \$3,353 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$1,459 transferred from Bureau of Animal Industry; and (2) \$1,894 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(b) Increase of \$13,246 compared with 1935 appropriation consists of -

5% salary restoration, 1936 (to 100%)	+ \$3,246
Increase in working funds for 1936	+ 10,100
Reduction: Offset of 1935 vacancy impoundment . . .	- <u>100</u>
	+ <u>13,246</u>

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
<u>Obligated:</u>					
Tobacco Investigations	\$66,736	\$72,498	\$85,844	(1)\$3,246	+\$10,100(2)
<u>Unobligated:</u>					
Salary reduction					
impoundments-.....	3,500	- - -	- - -	- - -	- - -
Other legislative					
impoundments-.....	- - -	100	- - -	- - -	- 100(3)
Other amounts unob-					
ligated	9,764	- - -	- - -	- - -	- - -
Total appropriation....	80,000	72,598	85,844	+ 13,246	

The increase of \$13,246 for 1936 includes:

(1) An increase of \$3,246 for 5% salary restoration, 1936 (to 100%).

(2) A total increase of \$10,100 as follows:

(a) An increase of \$100 offsetting vacancy impoundments, 1935 (See reduction explanation in note "3").

(b) An increase of \$10,000 for production of high nicotine-content tobacco to continue during 1936 the investigations carried on during 1935 under an allotment from the Public Works Administration. Trial plots of selected types of ordinary tobacco (*N. tabacum*) and of the species *Nicotiana rustica*, having a high nicotine content, were grown during the past season at Shafter and Davis, California; Corvallis and Astoria, Oregon; Bowling Green and Arlington Farm, Virginia; Lancaster and Lock Haven, Pennsylvania; Lakin, West Virginia; Madison, Wisconsin. The experiments include studies on yields of tobacco and its nicotine content, proper spacing of plants, value of topping and suckering and other cultural details, special methods of harvesting and drying and comparative costs of production. Laboratory study of the nicotine content of the material is now under way. Yield data are not yet available but some of these tests show considerable promise.

In addition, at Arlington Farm and at Lancaster, Pennsylvania, extensive selection work has been carried out with a previous cross of two promising types of *Nicotiana rustica*.

For successfully establishing the production of high nicotine-content tobacco, it is essential that heavy tonnage per acre of a high nicotine product be obtainable in order to keep down the unit cost of production of alkaloid. It is especially urgent that the work be pushed as rapidly as possible along the three lines which have been undertaken. It is already apparent that marked improvement in types for production of nicotine can be obtained by breeding. It has been established that nicotine content of tobacco also is greatly affected by environmental conditions and somewhat more comprehensive field trials are essential for

determining the areas possessing conditions especially suitable for growing tobacco as a source of nicotine.

(3) A decrease of \$100 offsetting vacancy impoundments, 1935.

This decrease is merely an offset for a corresponding increase estimated for obligation in 1936. (See note "2-a").

WORK DONE UNDER THIS APPROPRIATION

General. Tobacco investigations include all phases of growing, curing and handling tobacco, with the exception of tobacco insects and their control. The work consists of studies on tobacco diseases and their control, laboratory research on causes of poor quality in leaf tobacco and field investigations in the improvement of methods of fertilization, growing, curing, and handling the different types of leaf as each distinctive type of tobacco presents special cultural problems. Development by breeding of milder types of leaf having a reduced content of nicotine is a feature of the work, as are also the development of high nicotine tobaccos for use as raw material in production of insecticide and determination of best cultural methods for maximum production of nicotine. The primary aims are to increase the average quality of the tobacco produced and to reduce the hazards and heavy losses encountered in culture of the crop. Cooperative experiments are carried on at the Agricultural experiment stations of tobacco-growing states, namely, Connecticut, Georgia, Maryland, Massachusetts, North Carolina, Pennsylvania, South Carolina, Tennessee, Virginia, West Virginia, and Wisconsin, but no independent field stations are maintained.

Correct methods of fertilization are of outstanding importance in producing high quality tobacco and recent changes and trends in production and use of fertilizer materials have created urgent need for information as to the adequacy and limitations of the newer materials in the fertilization of the different types of tobacco. Results already obtained concerning the necessity of supplementing the highly concentrated fertilizer materials with magnesium and certain other elements have strongly emphasized the importance of these problems and the necessary information can be obtained only through extensive field and laboratory studies. It is essential also that cropping systems best suited to production of leaf of high quality be determined. Due to appearance of new diseases and spread of older troubles tobacco growers are suffering steadily increasing losses. The new blue mould or downy mildew constitutes a grave hazard over the greater portion of the tobacco producing area and it is especially important to further develop control measures by regulation of temperature and humidity in the seed bed. In the Burley areas, in which 500,000 acres of tobacco are grown, most growers suffer damage from the black root rot disease. In 1933 hundreds of acres of tobacco in Pennsylvania were practically ruined by the wildfire disease. Mosaic disease is widely prevalent in Maryland and other producing areas. Although definite progress has been made in developing control measures much additional work is required especially on some of the newer disease problems. Increase in the available supply of nicotine for insecticidal purposes at reasonable cost appears to be a matter of special importance at the present time, especially in connection with the spray residue problem.

(y) WESTERN IRRIGATION AGRICULTURE

Appropriation, 1932 \$ 187,875 (a)
 Appropriation, 1933 147,950
 Appropriation, 1934 130,000

 Appropriation, 1935 117,881 (b)
 Budget Estimate, 1936 110,527
 Decrease, Budget 1936, compared with
 Appropriation, 1935 7,354 (c)

(a) Includes \$153,940 in regular appropriation for 1932 and \$33,935 of the \$35,000 supplemental appropriation for 1932 carried in the Second Deficiency Act, 1931-1932, for relocating and equipping Hermiston, Oregon, field station.

(b) Includes \$12,000 reappropriated from unexpended balance of 1933 appropriation; and \$5,033 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) \$2,189 transferred from Bureau of Animal Industry; and (2) \$2,844 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(c) Decrease of \$7,354 compared with 1935 appropriation consists of -
 5% salary restoration, 1936 (to 100%) + \$4,646
 Reduction in working funds for 1936 - 11,900
 Reduction: Offset of 1935 vacancy impoundment 100
 - 7,354

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease	
				5% Salary Restoration	Working Funds
Obligated:					
Agronomic investigations in irrigation agriculture.....	\$78,598	\$87,334	\$78,730	\$ 3,296	-\$11,900(2)
Quality of irrigation and drainage waters..	28,907	30,447	31,797	1,350	- - -
Total obligations....	107,505	117,781	110,527	(1) 4,646	- 11,900
Unobligated:					
Salary reduction impoundments.....	6,000	- - -	- - -	- - -	- - -
Other legislative impoundments	1,000	100	- - -	- - -	- 100(3)
Other amounts unobligated	15,495	- - -	- - -	- - -	- - -
Total appropriation..	130,000	117,881	110,527	- 7,354	

The decrease of \$7,354 for 1936 includes:

(1) An increase of \$4,646 for 5% salary restoration, 1936 (to 100%).

(2) A net decrease of \$11,900 in the project "Agronomic Investigations In Irrigation Agriculture", consisting of a reduction of \$12,000 reappropriated for 1935 from unexpended balance in 1933 but not continued into 1936, and an increase of \$100 in working funds by release of 1935 impoundment. (See note "3").

(3) A decrease of \$100 offsetting vacancy impoundment, 1935.

CHANGE IN LANGUAGE

The change in language in this item is made in order to more correctly describe the activities conducted under this appropriation.

Omit after \$100,848 the following: "and in addition thereto \$12,000 of the unexpended balance for this purpose for the fiscal year 1933 is continued available for the same purpose for the fiscal year 1935".

WORK UNDER THIS APPROPRIATION

General. Under this appropriation the Bureau of Plant Industry is conducting investigations, independently and in cooperation with the States and other Bureaus of the Government, in the irrigated areas of the western United States, to determine the crops and crop rotations best suited to the several regions, and what constituents and concentrations of salts in irrigation and subsoil waters are injurious to crops, and how such injury may be minimized or prevented. The work of the Division is conducted under two projects as follows:

Agronomic investigations in irrigation agriculture. The work under this project is conducted at seven field stations. Six of these are conducted in cooperation with the States of Nevada, Oregon, Washington, Montana, South Dakota, and Nebraska. The work at these field stations consists in tests of varieties of field crops, an extensive and long-continued series of crop rotations, experiments in pasturing crops with livestock, and experiments in the use of manures and fertilizers. The fundamental objective of all these experiments is to determine what crops and what methods of crop production and utilization are best adapted to the respective areas and will best maintain the productivity of the irrigated lands. The field stations operated on the irrigated lands serve cooperating divisions of the Bureau of Plant Industry as well as divisions of other Federal Bureaus and research and demonstration agencies supported by the States (Bureaus of Animal Industry, Dairy Industry, Chemistry and Soils and Agricultural Engineering cooperating).

Quality of irrigation and drainage waters. The work under this project is conducted at two field laboratories, one at Riverside, California, and one at Fallon, Nevada. It is cooperative with the States of California and Nevada, with the Bureau of Reclamation, the Geological Survey, the International Boundary Commission (United States and Mexico), and with various irrigation districts. The investigational work consists in collecting and analyzing

samples of irrigation, drainage, and underground waters to determine what constituents and what concentrations of these constituents are causing crop injury or impairing the physical condition of the soil, to determine the sources of the contamination of irrigation supplies with such highly injurious substances such as the compounds of boron and chlorine, and how such contamination may be minimized or prevented to determine the efficiency of drainage in the removal of injurious salts and how that efficiency may be increased.

EMERGENCY FUNDS (General)

(1) Direct Allotments

Projects	Obligated 1934	Estimated 1935
<u>Loans and Relief in Stricken Agricultural Areas:</u>		
Transferred from Agricultural Adjustment Administration for survey and location of seed supplies and determination of suitable varieties for stricken agricultural areas.....	- - -	\$70,532
Transferred from Forest Service for investigations relating to selection and determination of suitable trees and shrubs for proposed forest shelter belt	- - -	10,000
Total	- - -	80,532
<u>Agricultural Adjustment Administration:</u>		
Transfer of funds for assistance in preparation of codes and market agreements in connection with agricultural adjustment programs.....	\$1,832	2,800
<u>Public Works Allotments (National Industrial Recovery Act):</u>		
<u>Spray-residue Investigations:</u> Conduct of agronomic studies of crops which furnish nonpoisonous spray materials..	6,050	33,950
<u>Physical Improvements at various field experiment Stations, etc.:</u>		
Date curing house, Parker, Ariz.	1,297	3
Date curing house, Sacaton, Ariz. ...	1,300	- - -
Painting buildings, Bard, Calif.	288	12
Concrete lining irrigation ditches and gates, Bard, Calif.	1,500	- - -
Drainage construction, Bard, Calif. .	1,200	- - -
Plant shelters and irrigation equipment repairing, enlarging, excavating, repairing, grading, Bard, Calif.	2,597	3

Projects	Obligated, 1934	Estimated, 1935
<u>Physical Improvements at various field experiment stations, etc.:</u>		
Exterior plaster and paint headhouse, Chico, Calif.	\$ 499	\$ 1
Altering and repairing Superintendent's house (now in dilapidated state), Chico, Calif.	1,599	1
Alterations to B and C buildings, Chico, Calif.	500	---
Alteration roof, headhouse group (to increase sheltered work area) Chico, Calif.	250	---
Repainting farm buildings (to increase shelter for potted plants during summer) Chico, Calif.	450	---
Additional lath house, Chico, Calif. ...	1,296	4
Painting and extending laboratory, Fresno, Calif.	1,500	---
Superintendent's residence, Fresno, Calif.	4,800	---
Painting and repairing buildings, Indio, Calif.	3,493	7
Laboratory building, Indio, Calif.	1,400	---
Small laboratory building, La Jolla, Calif. (Torrey Pines)	1,350	---
Cottage and storage building La Jolla, Calif. (Torrey Pines)	1,346	4
Garage and tool house, La Jolla, Calif. (Torrey Pines)	595	5
Repairs on greenhouse and heating plant, La Jolla, Calif. (Torrey Pines).....	1,457	43
Air conditioner in greenhouse, La Jolla, Calif. (Torrey Pines).....	3,368	1,632
Remodeling propagation equipment, La Jolla, Calif. (Torrey Pines).....	1,068	132
Painting and repairing buildings, La Jolla, Calif. (Torrey Pines).....	350	---
Laboratory building, Palo Alto, Calif....	1,300	---
Painting buildings, Riverside, Calif....	498	2
Repairing buildings, Riverside, Calif....	400	---
Greenhouse construction, Riverside, Calif.....	29	7,971
Repairing, remodeling greenhouses, irrigation lines, terraces, re- taining walls, farm buildings, Riverside, Calif.	1,799	1
Repairing buildings, Akron, Colo.	1,100	---
Painting buildings, Akron, Colo.	297	3
Repairing fences, Akron, Colo.	399	1
Renewing water piping, Akron, Colo.	100	---

Projects	Obligated, 1934	Estimated, 1935
<u>Physical Improvements at various field experiment stations, etc.:</u>		
Cleaning up shelter-belt and grounds, and eliminate noxious weeds (on dry land field station-agronomy), Akron, Colo.	\$ 600	---
Constructing garage to house three Government trucks, Ft. Collins, Colo. ...	398	---
Reconditioning beet storage cellar, Ft. Collins, Colo.	75	---
Reconditioning field laboratory building, Ft. Collins, Colo.	635	22
Reconditioning greenhouses, Greeley, Colo.	750	---
Greenhouse extension, Greeley, Colo.	3,500	---
Reconditioning barn, Greeley, Colo.	1,400	---
Cleaning up Arboretum area, chiefly hand labor, Washington, D. C.	4,000	---
Repainting one range of greenhouses, Washington, D. C.	438	62
Necessary repairs and painting, Government laboratories and cottage, Canal Point, Fla.	691	---
Repairing Coral rock roads, Coconut Grove, Fla.	1,200	---
Constructing new lath house, to increase growing space most cheaply, Coconut Grove, Fla.	1,299	1
Repairing and reglazing greenhouses, Coconut Grove, Fla.	350	---
Repairing lath screen over greenhouse, Coconut Grove, Fla.	446	4
Replacing heat system with electric system to reduce cost of maintenance, Coconut Grove, Fla.	593	7
Building new greenhouse, to reduce crowding in present houses; increases output, Coconut Grove, Fla.	1,196	4
Building soil, manure shed, to prevent losses in manure and prepared composts.	1,300	---
Repairing and enlarging plant shelters, rubber planting, retaining walls, implement sheds, near Miami, Fla.	2,509	---
Extending and repairing laboratory building, Orlando, Fla.	3,598	2
Conditioning buildings, Albany, Ga. (Philema).	299	1
Repairing several buildings, Fort Valley, Ga.	1,900	---
Constructing coal pit, Fort Valley, Ga..	450	---

Projects	Obligated, 1934.	Estimated, 1935.
<u>Physical Improvements at various field experiment stations, etc.:</u>		
Constructing garage, Fort Valley, Ga.	\$1,150	---
Repairing cottage, barn roofs, Savannah, Ga.	450	---
Building fence and gates for office area, Savannah, Ga.	300	---
Constructing small office, Savannah, Ga.; Present office in barn inadequate.....	1,400	---
Constructing garage to house five Gov- ernment trucks, Twin Falls, Idaho.....	735	\$ 15
Necessary repairs and painting one greenhouse, Houma, La.	125	---
Altering buildings, Shreveport, La. (Robson).	599	1
Extending implement shed, Presque Isle, Maine.....	316	---
Laboratory building, Presque Isle, Maine.	3,484	---
Clearing land, drainage and repairing irrigation ditches, Beltsville, Md. ...	11,998	2
Constructing waterlines and 4 wells, Beltsville, Md.	6,878	122
Erecting irrigation systems, Belts- ville, Md.	2,476	24
Constructing roads and walks, Belts- ville, Md.	4,990	10
Reconditioning hotbeds, Beltsville, Md...	789	11
Moving propagating house, Beltsville, Md.	600	---
Installing electric power, Beltsville, Md.	---	2,800
Constructing three bank storage cellars, Beltsville, Md.	4,991	9
Constructing sweet potato storage, Beltsville, Md.	1,974	26
Purchase of leased land, Beltsville, Md..	80,793	1,707
Staff laboratory and research building equipped (all phases horticultural research), Beltsville, Md.	27,088	110,695
Cold storage building equipped (fruit and vegetable research), Beltsville, Md.	5,769	---
Ten greenhouses, heating equipment and headhouses (fruit and vegetable research), Beltsville, Md.	22,314	102,686
Construction, equipment, and operation of a fruit products laboratory on Gov- ernment-owned ground, near Belts- ville, Md.	---	159,500
Foreman's cottage, Beltsville, Md.	3,489	11

Projects	Obligated, 1934	Estimated, 1935
<u>Physical Improvements at various field</u>		
experiment stations, etc.:		
Propagating house, Beltsville, Md.	\$ 1,468	\$ 32
Two lath and screen houses, Beltsville, Md.	2,596	. 4
Two garages, Beltsville, Md.	1,176	1,824
Implement shed, Beltsville, Md.	1,500	---
Soil and fertilizer house, Beltsville, Md.	1,486	14
Repairing and painting buildings, Beltsville, Md.	1,000	---
Constructing three tool sheds, Belts- ville, Md.	1,101	399
Constructing hot beds and cold frames, Beltsville, Md.	2,000	---
Constructing quarantine greenhouse, to care for increasing material under detention, Glenn Dale, Md.	8,499	1
Moving quarantine greenhouse from Beltsville reerect at Bell, Md.	2,500	---
Partition in house #2, Glenn Dale, Md.	300	---
Overhauling heating system to control temperatures and convert to oil, Glenn Dale, Md.	2,499	1
Installing deep seed pit for germina- tion of hard seeds, Glenn Dale, Md. ..	799	1
Completing transfer of seed frames and yard, Glenn Dale, Md.	600	---
Cold storage unit for seed and nursery stock with automatic temperature control throughout, Glenn Dale, Md...	2,000	---
Implement shed, Meridian, Miss.	1,350	---
Foreman residence, Meridian, Miss.	3,000	---
Rehabilitating office, building, Huntley, Mont.	898	2
Tile-draining seeped land, Huntley, Mont.	2,196	4
Replacing fencing, Huntley, Mont.	699	1
Addition to cottage - two rooms, Huntley, Mont.	1,295	5
Replacing fencing, Mitchell, Nebr.	350	---
Repairing buildings, Mitchell, Nebr.	600	---
Road construction, Mitchell, Nebr.	300	---
Repairing and remodeling station, State College, N. Mex.	900	---
Repairing fences, Tucumcari, New Mex.	450	---

Projects	Obligated 1934	Estimated obli- gations, 1935
<u>Physical Improvements at Various Field Experiment Stations, etc.:</u>		
Repairing and painting buildings, Tucumcari, N. Mex.	\$ 200	- - -
Clearing land for experimental work, Tucumcari, N. Mex.	200	- - -
Repairing roads on dry land field sta- tion - agronomy, Tucumcari, N. Mex. ..	900	- - -
Digging well, at station, water for stock and household use, Tucumcari, N. Mex.	2,500	- - -
Repairing storage house, Willard, N. C.	450	- - -
Greenhouse, Willard, N. C.	2,000	- - -
Laboratory and propagating shed, Willard, N. C.	1,500	- - -
Repairing and painting buildings, Mandan, N. Dak.	884	16
Repairing greenhouse, Mandan, N. Dak. .	198	2
Renewing water piping, Mandan, N. Dak.	298	2
Repairing fences, Mandan, N. Dak.	249	1
Repairing roads and walks, Mandan, N. Dak.	800	- - -
Cleaning up shelter-belt and horticult- ural plantings, Mandan, N. Dak.	1,499	1
Grading and terracing land, Mandan, N. Dak.	984	16
Destroying noxious weeds, Mandan, N. Dak.	300	- - -
Constructing machine shed to house Government machinery, Mandan, N. Dak. .	2,000	- - -
Constructing machine shed to protect Government property, Woodward, Okla. ..	2,000	- - -
Renewing water and steam piping, Wood- ward, Okla.	591	9
Extending overhead irrigating system, Woodward, Okla.	400	- - -
Remodeling employee's cottage, Woodward, Okla.	1,300	- - -
Repairing and painting buildings, Woodward, Okla.	800	- - -
Repairing walks, roads, grade land (on dry land field station, agronomy, horticulture, arboriculture) Wood- ward, Okla.	300	- - -
Leveling land, Hermiston, Oreg.	2,000	- - -
New irrigation ditches, gates, etc., Hermiston, Oreg.	2,700	- - -
Laboratory building, Hood River, Oreg...	2,500	- - -

Projects	Obligated 1934	Estimated obli- gations, 1935
<u>Physical Improvements at Various Field Experiment Stations, etc.: (Cont'd.)</u>		
Constructing laboratory building, Medford, Oreg.	\$1,500	- - -
Constructing implement shed, Medford, Oreg.	1,000	- - -
Erecting one small cottage and one of- fice building, Guayama, Puerto Rico..	2,399	1
Repairing, remodeling, station equip- ment, drainage, grading roads, James Island, S. C.	1,999	1
Repairing storage cellar Charleston, S. C.	96	4
Replacing office and laboratory building, Newell, S. Dak.	2,399	1
Repairing other buildings, Newell, S. Dak.	599	1
Drainage construction, Newell, S. Dak.	1,400	- - -
Cottage for superintendent of dry land investigations, Newell, S. Dak..	2,400	- - -
Constructing machine shed, protect Government property, Big Spring, Tex.	1,299	1
Repairing buildings, Big Spring, Tex.	899	1
Repairing fences, Big Spring, Tex. ...	500	- - -
Remodeling foreman's cottage, Big Spring, Tex.	896	4
Repairing water piping, Big Spring, Tex.	300	- - -
Cleaning up grounds on dry-land field Station - agronomy, Big Spring, Tex..	100	- - -
Painting building, Brownwood, Tex. ...	750	- - -
Repairing and painting buildings, Dalhart, Tex.	2,000	- - -
Repairing fences and cleaning up grounds, Dalhart, Tex.	350	- - -
Eliminating noxious weeds, Dalhart, Tex.	298	2
Constructing machine shed, protect Government property on dry land field station - agronomy	1,500	- - -
Repairing, remodeling, station equipment, drainage, grading roads, Greenville, Tex.	2,478	22
Constructing garage to house five Gov- ernment trucks, Salt Lake City, Utah.	850	- - -
Resurfacing station roads, Rosslyn, Va.	2,463	37
Conditioning buildings, Bellingham, Wash.	800	- - -

Projects	Obligated 1934	Estimated obli- gations, 1935
<u>Physical Improvement at Various Field Experiment Stations, etc.: (Cont'd.)</u>		
Land drainage, Bellingham, Wash.	\$1,000	- - -
Reconditioning all buildings, Cheyenne, Wyo.	5,999	1
Constructing irrigation system, Cheyenne, Wyo.	5,500	- - -
Repairing and oiling roads, Cheyenne, Wyo.	2,509	2,491
Repairing and painting residences, barn and office buildings, and installing furnaces, Sheridan, Wyo.	2,498	2
Renewing water piping, Sheridan, Wyo. .	300	- - -
Repairing roads on dry land field station - agronomy, Sheridan, Wyo.	350	- - -
Replacing roof of laboratory, Canal Point, Fla.	547	- - -
Repairing superintendent's cottage, Canal Point, Fla.	693	- - -
Replacing garage, Canal Point, Fla. ...	1,260	- - -
Repairing cabins, Canal Point, Fla. ...	100	- - -
Repairing greenhouse, Canal Point, Fla.	150	- - -
The establishment of a Federal cotton breeding field station and seed farm in the Mississippi Delta.....	6	44,994
Construction of a nut storage building and implement storage to study the best method of storing and holding pecans for the market, Meridian, Miss.	1,554	3,446
Foreman's residence, Meridian, Miss.	3,441	59
Superintendent's cottage, Meridian, Miss.	84	4,916
Construction of greenhouse and headhouse for production of early plants for experimental work, etc., Meridian, Miss.	130	5,870
Construction of grape trellis, Meridian, Miss.	- - -	1,000
Construction of cold frames and hotbeds, Meridian, Miss.	230	1,270
Sweet potato storage building, Meridian, Miss.	2,450	50
Construction of laboratory office building and sugar cane mill, equipped, Meridian, Miss.	360	14,640
Cold storage and fruit and vegetable products building, equipped, Meridian, Miss.	408	44,592
Construction of roads and walks and the landscaping of grounds, Meridian, Miss.	- - -	5,000

Projects	Obligated 1934	Estimated obli- gations, 1935
<u>Physical Improvement at Various Field Experiment Stations, etc.: (Cont'd.)</u>		
Providing land, buildings, and other facilities for cotton investiga- tional work, North Carolina. (Seventy thousand dollars trans- ferred from Soil Erosion Nurseries)...	\$ 19,565	\$102,935
Repairs and improvements to build- ings, Willard, North Carolina	2,401	99
Screen and lath house, Willard, N. C...	1,232	768
Building roads and walks, erecting irrigation system, constructing water and tile drainage, Willard, N.C.	2,668	2,632
Providing land, buildings and other facilities for investigational studies in cotton and cereal crops, Tennessee.....	- - -	51,500
Construction of artesian well, Newell, S. Dak.....	643	19,357
Machine-shed, sheep and lambing shed, buildings and repairs, Newell, S. Dak.	3,950	1,750
<u>Total, Physical Improvements</u>	<u>408,178</u>	<u>697,329</u>
<u>Civil Works Projects:</u>		
Repairing and reconditioning buildings, roadways, fences, and drainage ditches at various field stations	29,002	- - -
<u>Loans and Relief in Stricken Agricultural Areas:</u>		
Transfer from A.A.A. for survey and location of seed supplies and deter- mination of suitable varieties for stricken areas.....	- - -	70,532
Transfer from Forest Service for investigations relating to selection of trees and shrubs for proposed shelter belt.....	- - -	10,000
<u>Total.....</u>	<u>- - -</u>	<u>80,532</u>
<u>Agricultural Adjustment Administration:</u>		
For assistance in preparing codes and market agreements in connection with Agricultural Adjustment pro- grams.....	1,832	2,800

(2) Projects Financed Through
Other Governmental Agencies

185

Projects	: Obligated : 1934	: Estimated obli- : gations, 1935
<u>Emergency Conservation Fund:</u>		
<u>Transfer to War,</u>		
<u>Act of March 31, 1933:</u>		
Research on forest disease questions of immediate practical importance; technical assistance and service to CCC personnel engaged in disease prevention and control work	\$38,663	\$2,182
<u>Transfer to War,</u>		
<u>Act of June 19, 1934:</u>		
Same line of work as above	- - -	19,155
<u>Total, Emergency Conservation Work.....</u>	<u>38,663</u>	<u>21,337</u>

EMERGENCY FUNDS - BUREAU TOTAL

Summary

Projects	: Obligated, : 1934	: Estimated obli- : gations, 1935
(1) <u>Direct Allotments:</u>		
Public Works Allotments (National Industrial Recovery Act):		
National Arboretum	\$385,350	\$10,650
Erosion Control Nurseries.....	70,235	489,765
Spray Residue Investigations.....	6,050	33,950
Physical Improvements.....	408,178	697,329
Total, Public Works.....	869,813	1,231,694
Loans and Relief in Stricken Agricul- tural Areas	- - -	80,532
Transfer from Agricultural Adjustment Administration.....	1,832	2,800
Civil Works Projects	29,002	- - -
Total, Direct Allotments	900,647	1,315,026
(2) <u>Projects financed through other Govern- ment Agencies:</u>		
Emergency Conservation Fund (through War Department)	38,663	21,337
Total, Emergency Funds	939,310	1,336,363

PASSENGER CARRYING VEHICLES

The authorization for purchase of passenger-carrying vehicles contemplates an increase of \$5,925 (\$3,750 in 1935; \$9,675 estimated for 1936) for this purpose. As shown by the Budget schedule, the \$9,675 authorization would permit replacement of 7 vehicles and the purchase of 10 additional vehicles.

The replacements are needed in order to obviate the continued use of worn-out cars at excessive maintenance costs.

The work of the Bureau of Plant Industry is necessarily to a very large extent in the country, where transportation through the use of automobiles is essential to effective work. Automobiles can be obtained for the purpose by hiring commercial cars, by using personally owned cars of employees on the mileage basis, or by the purchase of Government owned cars. The latter method has been found to be the most economical in the work of the Bureau of Plant Industry, costing on the average of about 3 cents per mile for light makes of cars. The purchase of additional cars included in these estimates will reduce the use of personally owned cars which cost in the neighborhood of 5 cents per mile and also the hire of commercial cars which cost from 10 to 15 cents per mile.

All of the new machines requested will be used at points in the field incident to the conduct and supervision of experimental work. Specifically, three machines will be used on cereal work in northwestern and southwestern states; two on cotton work in states in the southwest and southeast; two in shelter-belt work in North Dakota and four adjacent states; two in forage and pasture surveys in Utah and Virginia; three in forest pathology in Louisiana, Connecticut, and Oregon; and five in fruit and vegetable crops and disease investigations in practically every section of the United States.

